

The Iron Age

A Chilton Publication

NATIONAL METALWORKING WEEKLY • AUGUST 26, 1954



You get the benefits of expensive metals...

without their high costs when you use Thomas pre-coated strip steel in the manufacture of your products. It is available coated with copper (as shown above emerging from one of Thomas' electroplating units) also zinc, brass, nickel, lacquer, tin, or lead alloy in either planished or buffed finishes. A Thomas sales engineer will be glad to study your fabricating processes and make a proposal that could save you time and money and enable you to make more salable products. Call or write today!

Thomas Strip[®]

COLD ROLLED STEEL

Thomas Strip Division
Pittsburgh Steel Company • Warren, Ohio

ALLIS-CHALMERS GETS THE CEILING INTO THE PICTURE



... and steps up metal pouring speed 60%

At the Allis-Chalmers foundry in La Crosse, Wisconsin, Whiting Trambeam Overhead Systems do a faster job of handling the heavy work of charging, transferring and pouring.

In addition to increasing the pouring speed Trambeam has helped to reduce costs, improve employee morale and eliminate traffic jams.

Have you considered the advantages of bringing your "ceiling" into the picture?

Trambeam monorail and crane systems are being used to clear floors for action for all types of industry... making materials handling faster, easier and safer... turning "overhead" into profit.

Write today for case study reports (M-27 foundry... M-26 steel warehouse... M-22 general manufacturing plant).

A few of the many other Whiting products include...

TRACKMOBILES



ELECTRIC FURNACES



HOISTS



OVERHEAD CRANES



TRAIN WASHERS



EVAPORATORS AND SPRAY DRYERS



TRAMBEAM OVERHEAD
HANDLING SYSTEMS

WHITING CORPORATION

15601 Lathrop Ave., Harvey, Illinois

Whiting Corporation (Canada) Ltd.,
P.O. Box 6, Station D, Toronto 9, Ontario



Now . . . Ice-cold soft drinks in Cans

Ginger ale . . . root beer . . . orange . . . cola . . . or grape. Now available in throwaway cans, these and other delicious flavors of "pop" are making a hit from Coast to Coast.

Soft drinks in cans didn't happen overnight, of course. These new containers are the result of much research by leading can-makers who are now producing them in both cone-top and flat-top styles.

So many things you use each day come in these

familiar steel containers. Vegetables, soups, fruits, frozen juices with vitamins and full flavors sealed in. And whether you're buying oil, paint or insecticide, cans give unequalled protection against light, moisture, air and dirt.

Cans are made from tin plate, thin sheets of steel which are coated with tin. Bethlehem supplies can-makers with high-quality tin plate which we produce at our Sparrows Point Plant near Baltimore.

BETHLEHEM STEEL



Starred Items are digested at the right

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NEWS DEVELOPMENTS

AN UPTURN STARTS IN SOME STEEL ITEMS — P. 51

Economic weathermen last week took note of the signs and predicted brighter weather for steelmakers in the offing. Signs were: Inventory reduction has about run its course, and, with manufacturing from inventory no longer possible, consumers may be adjusting steel buying upward whether their own business went up or not. So far it's spotty but September purchases of certain products are almost sure to rise, sheets and bars among them. But others may dip.

GI TALENT POOL SEEKS INDUSTRIAL JOBS — P. 53

Soldiers at Army Ordnance's Aberdeen Proving Ground are running a flourishing placement service for GIs awaiting discharge. Most of the men are college graduates, many with advanced degrees. And industry has found a rich lode of talent. Survey showed the companies the soldiers most wanted to work for.

COST OF FRINGE BENEFITS KEEPS SOARING — P. 54

Cost of fringe benefits to industry now amounts to \$720 per worker per year, or 19.2 pct of total pay roll. Cost per worker has nearly doubled for some firms since 1947.

STOCKHOLDERS MERGE PACKARD-STUDEBAKER—P. 57

A good look at the economic facts of life and over 80 pct of Packard and Studebaker stockholders voted solid approval of the merger. Stocks split to adjust differences. Gives new firm a fighting chance.

BUSINESS FARED WELL UNDER 83RD CONGRESS—P. 59

Box score of the 83rd Congress shows business did well as compared to other recent sessions. Biggest breaks were tax revision bill, excise cuts, slashes in government spending. Other boosts include liberalized home buying terms, expanded roadbuilding and shipbuilding measures, easier securities marketing laws and private development of atomic power.

WHAT WILL CAMPAIGN ISSUES BE THIS FALL?—P. 67

Democratic party leaders are seriously worried because they're having trouble finding a convincing campaign issue. They had figured a full blooming recession would sweep them into control of Congress. Democrats will still make the most they can out of "recession" but this issue has lost much of its impact because of the business pickup. Republicans will try to get in on Ike's popularity record of 83rd Congress.

IN METALWORKING

ENGINEERING & PRODUCTION

INDUCTION HARDENING IMPROVES GEAR LIFE—P. 93
Improvements in induction hardening techniques have resulted in increased tooth hardness on large gears, adding greatly to gear life. Localized, selective hardening cuts distortion. Short heat treating cycles in small size equipment keep costs down.

RADIATION AFFECTS STRUCTURAL MATERIALS—P. 97
Nuclear reactors, as peacetime sources of power, will pose new problems for engineers and metallurgists. Radiation affects the mechanical, physical and tensile properties of commonly used structural materials. A series of tests have been made under a range of irradiation and temperature exposures.

TRANSFER DEVICES EXTEND AUTOMATION — P. 101
Greater use of automatic handling devices is increasing production and improving safety in one press shop. New transfer devices move gas tank halves from a draw press and insert each stamping into the trim press die.

WELDING WITHOUT PREBEVELING CUTS COST — P. 104
New fabricating methods eliminate the need for prebeveling on most jobs involving contours and shapes. Procedures center around the use of a compact electric arc and compressed air torch for cutting and gouging metals. Torches work efficiently on mild steel, stainless alloys and clad metals.

FINE METAL SCRAP USED IN CUPOLA CHARGE—P. 106
Fine metal particles from machining, grinding and press operations can be used successfully in the cupola charge. Economical sheetmetal cans of special design are used to keep fine particles packed tightly. Oxidation problems are simplified.

NEXT WEEK:

PARTICLE SIZE DISTRIBUTION ANALYZED QUICKLY
Control of particle size distribution determines quality in many products made from powdered materials. Now, with a new analyzing instrument, this distribution can be determined more rapidly and more accurately for particle sizes from 1 to 250 microns.

MARKETS & PRICES

PUMP MAKERS CAUTIOUS, SEE FALL UPTURN — P. 61
Flurry of recent inquiries has injected cautious optimism into industrial pump field. Fall sales outlook is brighter after 10 to 20 pct dip in first half. Demand gains for special pumps.

CHRYSLER BETS ON STYLE IN SALES RACE — P. 70
There's a strong feeling of tension in Chrysler's 200-man styling crew. The '55 models are designed with an eye to regaining the firm's earlier share of the automotive market. They're completely restyled in the first complete model change since V. M. Exner took over as Chrysler style boss.

WATCH PARTS MAKERS FOR NEW AUTO BUYING—P. 133
First steel buying for new auto models probably won't be noted on sheets—even though the industry consumes about half of cold-rolled sheet production. First new orders may come from parts makers using stainless and other alloy steels. The very sick alloy bar market got a good lift from two customers making auto parts. This is thought to be part stock for new models. But auto buying is later than was expected.

STEEL MARKET LINGERS IN SUMMER RUT — P. 135
Sheets in fair demand but need automotive support. Bar markets continue slow with a slight upturn in hot-rolled in Midwest. Oil country goods still a breadwinner but softness noted in linepipe. Merchant wire volume holding despite spotty ordering by jobbers.

IKE REJECTS HIGHER LEAD-ZINC TARIFFS — P. 136
The President late last week rejected proposed higher tariffs for lead and zinc as a cure for the mining industry's ailments. Reason: Our international relations would suffer too much. Alternate plan includes stepped up stockpiling. If this doesn't work other measures will be taken early next year.

WELDED WIRE FABRIC GAINING IN ROADWORK
Welded wire fabric has long shown its worth in highway and building construction. But use has been sparing. Salesmen today are eagerly eyeing new markets that could boost consumption six times. It costs more but roads last up to 70 pct longer.

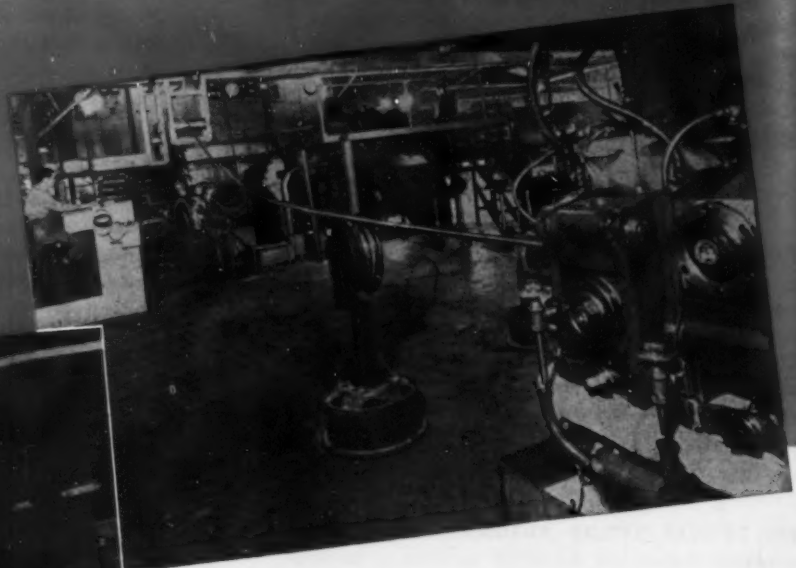
PRODUCES—

Southwire Company

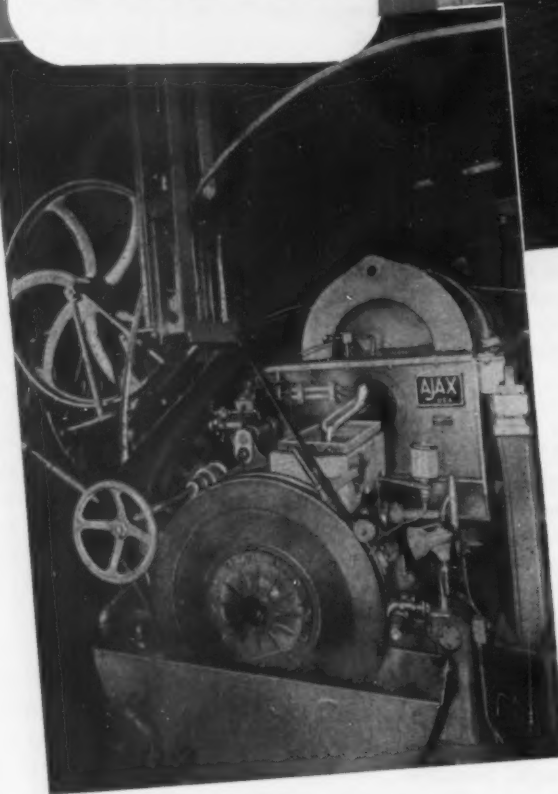
*with the
help of*

**AJAX
FURNACES**

**high conductivity
aluminum wire
direct from the
molten metal...**



Above photo shows aluminum rod passing from the Properzi casting machine in the background to the rod mill in the foreground. AJAX furnace is at right of the Properzi machine.



Close-up of Properzi machine showing how molten metal is fed to it from AJAX furnace.

In connection with the well-known Properzi method, the Southwire Company of Carrollton, Georgia, is using an AJAX low-frequency induction furnace for the quick and efficient melting of high purity aluminum.

This combined melting and holding furnace is ideally suited to mass or continuous production processes, because the molten metal can be fed in a steady stream from the holding reservoir of the furnace, which in turn is kept supplied with metal from the melting reservoir.

The induction melting process produces an inherent stirring of the metal due to electrical impulses, resulting in a homogeneous mix. Scrap loss averages less than 1 pct. Working conditions are comparatively clean and cool because the only heat generated is within the melt itself.

Write for Reprint of Article Entitled "ALUMINUM: Continuous Casting Gaining"

AJAX

TAMA-WYATT



AJAX ENGINEERING CORP., TRENTON 7, N. J.

INDUCTION MELTING FURNACE

AJAX ELECTRO METALLURGICAL CORP., and Associated Companies
AJAX ELECTROTHERMIC CORP., Ajax Northrup High Frequency Induction Furnaces
AJAX ELECTRIC CO., INC., The Ajax Hultgren Electric Salt Bath Furnace
AJAX ELECTRIC FURNACE CORP., Ajax Wyatt Induction Furnaces for Melting

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and the Engineering Index.



Editorial:

We Have To Do Both

THE Reds have not changed their color despite the smiles, diplo-
matic bowing and scrapings at Geneva and the playing up to
the French and British. They still hope to dominate the world. They
would rather do it without war. They are having good luck splitting
Western allies, capturing millions of Asiatic minds and getting mil-
lions of Americans to believe they are not too dangerous.

For the time being America seems to have lost her leadership.
But this is only temporary. It is clear that we will operate on our
own when we think we are right and cooperate with the British and
French when we think they are right.

We have two strong opinions at home which appear to be at log-
gerheads. Millions of people and top leaders feel we should become
stronger in the international picture. Millions of others supported
also by some top leaders think we ought to withdraw from the inter-
national situation and make the Western Hemisphere much stronger.

We have intervention for the protection of free peoples versus
Fortress America with a solid block in the Western Hemisphere gir-
ding itself to throw off any enemy: in formal terms, internationalism
versus isolationism.

The cold hard fact is that we can't be one and not the other; we
have to be both. That is sinking in with many of our government
leaders in Washington. The military has been discounted too much
by civilian advisors. Time was when the military was too big for its
pants—it isn't now. We have gone too far the other way.

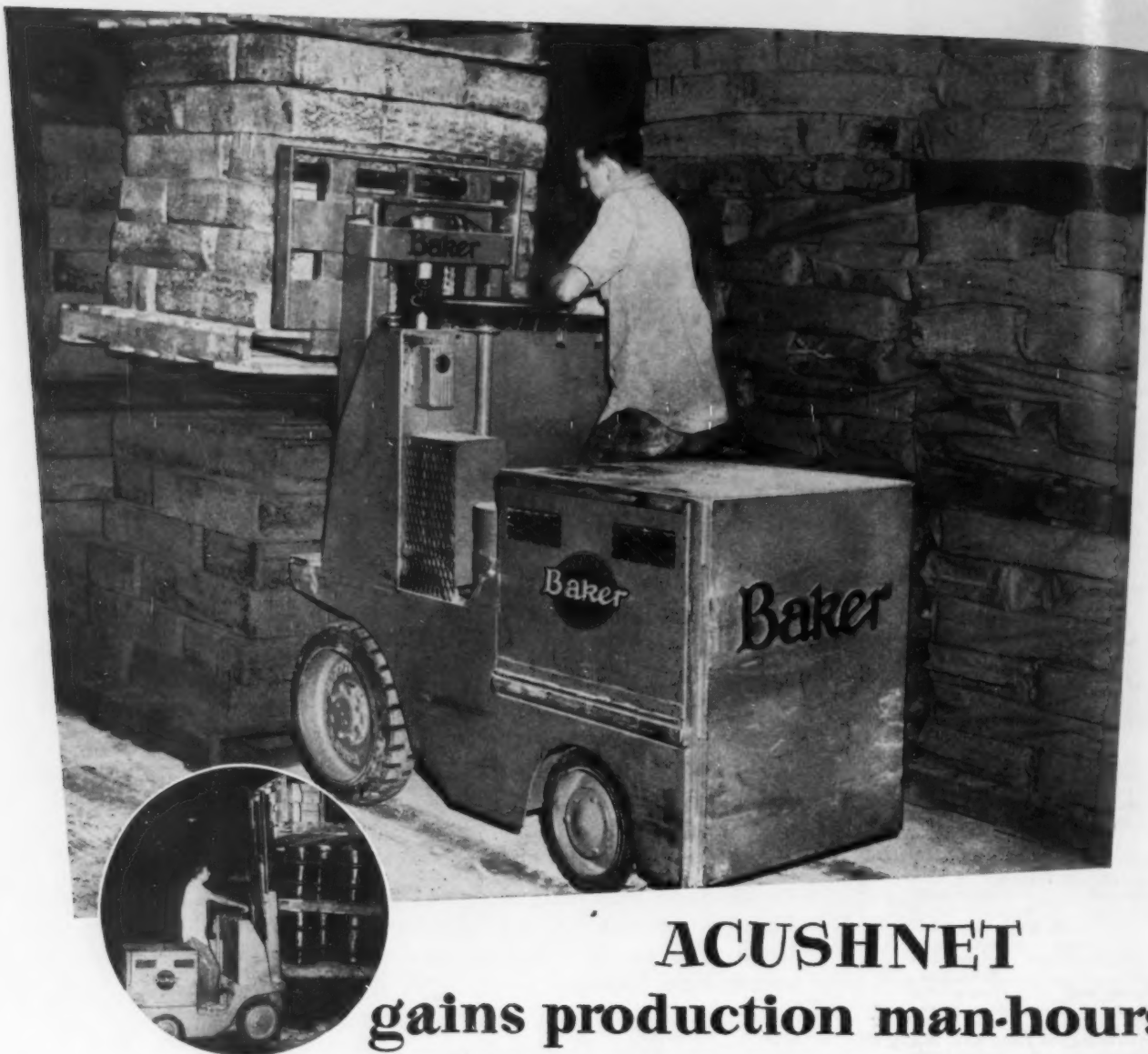
We must see that a line is drawn to stop the Reds. We must pay
for our freedom if our policies are challenged. Not to do so would
mean that the Communists will keep right on taking anything they
want—ending up in the Big War. They will be ready for that war.
Maybe we won't be ready.

At home we will have to build Fortress America. We must in-
crease the army, expand our defenses, produce high cost raw mate-
rials (which we now get from abroad), increase stockpiling and mend
our South American fences.

Not to do both things quickly could mean that each day we are
in greater danger of defeat because of indecision, easy living and
wishful thinking.

Tom Campbell

EDITOR



ACUSHNET gains production man-hours while decreasing payroll!

○ Acushnet Process Company of New Bedford, Massachusetts, manufacturers of the well-known "Titleist" Golf Ball and supplier of precision-molded rubber parts to all of industry, has increased the productive efficiency of its labor force by mechanized handling with fork lift trucks thus eliminating backbreaking manual handling.

Last year the company purchased a Baker 4,000 pound fork truck for its receiving department. The truck's ability to enter a trailer and handle material on pallets was one of the factors in cutting freight handling costs in half. Time for unloading a typical 3,000 pound highway truck load of raw materials was reduced from 4 to 1¼ hours. The dependability of the Baker battery-powered truck, with practically no down-time and very little maintenance was another decided improvement

over the gas fork truck formerly on this job. Additional advantages are quietness of operation and greater speed in handling and maneuvering.

Acushnet handles each month about a million pounds of raw materials such as baled crude rubber, synthetic rubber blocks, and drum-loads of raw ingredients. All are now handled on pallets with fork trucks.

Write for your free copy of the "Baker Handling Library", a portfolio of case histories showing actual cost savings in a wide variety of plants. The Baker Raulang Company, 1227 West 80th St., Cleveland 2, Ohio.

Baker.
industrial trucks

dear editor:

Many Thanks

Sir:

Having noted the very excellent resume on metal cleaning in a recent issue of your fine publication, I wonder if you would be so kind as to forward three copies of the magazine to my attention. Should the insert be available separately it will be equally appreciated.

I would also compliment your publication on your "new look." It is a grand improvement and, in my opinion, makes for much more comfortable reading as well as eye appeal. Tightly packed pages of type have always scared me away from otherwise good material and I believe that many others also concur with this feeling. This is especially true in these crowded times with minutes and seconds being valuable to the average man.

Once again, my compliments to all of you for a very fine publication. *N. A. Mack, Technical Director, Printing Developments, Inc., New York.*

Portable Press

Sir:

In reading your July 8 issue I came across an interesting statement on p. 45 concerning a "motor driven portable press feed unit." We are continually looking for improved methods and would appreciate any information you may have on this item. *E. J. Kolkman, International Business Machines Corp., Poughkeepsie, N. Y.*

Contact the Hautau Engineering Co., 721 Wanda Ave., Detroit 20, Mich., for more information.—Ed.

British Distribution

Sir:

For several years we have distributed to customers and prospective customers a reprint of the article "Aluminum Scrap Recovery Saves 5 Million Lb." from your Sept. 27, 1951, issue.

Our licensees in England have

letters from readers

now asked us for permission to reprint the same article for distribution among their customers. We are, therefore, asking your permission for such a reprint by Birlec Ltd., Birmingham; of course, proper credit will be given THE IRON AGE. *I. Tama, Technical Information, Ajax Engineering Corp., Trenton, N. J.*

M-Alloy

Sir:

On p. 64 of your July 1 issue, photograph caption, mention is made of M-Alloy.

Can you kindly advise composition of this material? *R. J. Anderson, Head, Dept. of Metallurgy, Southwest Research Institute, San Antonio, Tex.*

More details on the new steel alloy may be obtained from Beardsley & Piper, Div. of Pettibone Mulliken Corp., 2424 N. Cicero Ave., Chicago.—Ed.

Density Gage

Sir:

In reading your Aug. 12 issue we noticed an article which is of great interest to us in our field.

The article appears on p. 65 and has reference to a density gage. If possible would you give us further information so we can contact the manufacturer for more details. *G. H. Little, Project Engineer, Aerial Products, Inc., Elkton, Md.*

Write to Isotope Products Ltd., Davis Road, Oakville, Ont., for more details.—Ed.

Simplifies Tooling

Sir:

We are very much interested in the item marked "Tooling Is Simplified" which appeared on p. 51 in your Aug. 5 issue.

Please forward all available information. *I. F. Herbes, Works Manager, Allen-Bradley Co., Milwaukee.*

Further details may be obtained from Haller, Inc., Plymouth, Mich.—Ed.

What does
"S.B."
mean to you?



To some, it means Salad Bowl and a French chef concocting a tasty dish. But, to hundreds of industrial designers, it means Small Balls... the precisioneered kind Universal makes so accurately for smooth operation.

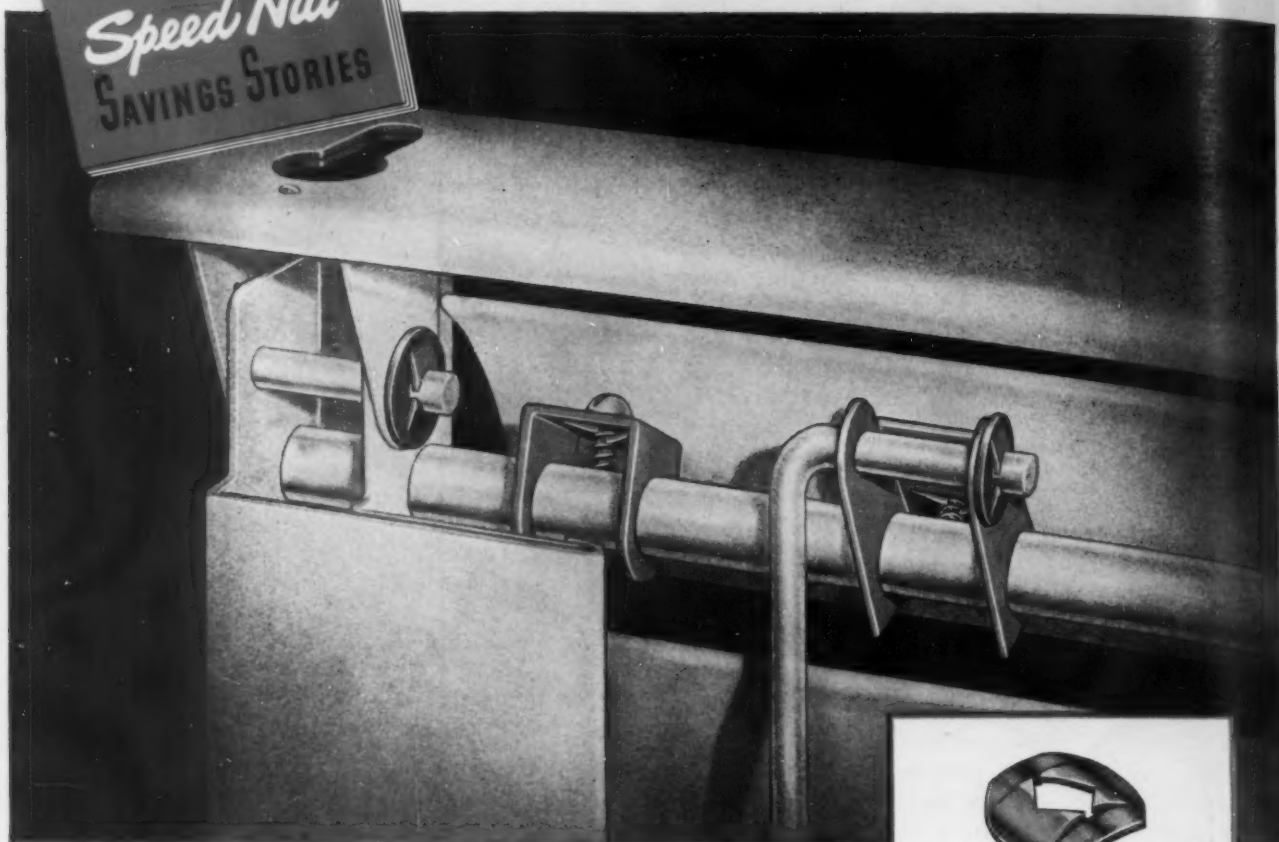
How small is small? Anything from the size of a pinhead up to you-name-it. Universal has special skills for making these perfect peewee pellets. Write for details.

**Universal
Ball co.**

WILLOW GROVE
MONTGOMERY CO., PA.



FASTEST THING IN FASTENINGS®



"New twist" cuts assembly costs 63% on Awnair Adjustable Awnings



How to assemble adjustable awnings faster, easier and at lower cost? This 3-way challenge was met recently by engineers of the Awnair Corporation of America, Wayne, New Jersey. Playing leading roles in this success were Tinnerman SPEED NUTS!

Standard Push-On type SPEED NUTS were recommended for eight fastening applications.

And three specially developed SPEED NUT brand fasteners put a "new twist" in the awning adjusting mechanism. They provide lightning-fast, rust-resistant, rattle-proof attachments. They also eliminate costly sawing, drilling, tapping, clinching and sanding operations.

The use of SPEED NUTS resulted in a 63% average assembly cost saving over former fastening methods, including a big 88% saving on one application!

Your Tinnerman representative will be glad to help you locate fastening savings in your product assemblies. Ask him for complete details on our Fastening Analysis Service!



PUSH-ON SPEED NUTS®



Start by hand



... zip over integral studs, rivets, tubing, or other unthreaded parts; bite into smoothest, hardest surfaces—lock with firm spring tension on metal, plastic or wood. Eliminate costly inserts in plastics; save machining of die castings!

Write today for your copy of the new Tinnerman Fastening Analysis Service Bulletin No. 336:

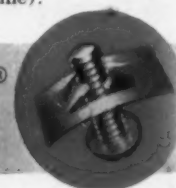
TINNERMAN PRODUCTS, INC., Box 6688, Department 12, Cleveland 1, Ohio. In Canada: Dominion Fasteners, Ltd., Hamilton, Ontario. In Great Britain: Simmonds Aerocessories, Ltd., Tre-forest, Wales. In France: Aerocessaires Simmonds, S. A.—7 rue Henri Barbusse, Levallois (Seine).



TINNERMAN

Speed Nuts®

MORE THAN 8000 SHAPES AND SIZES



fatigue cracks

Now Hear This—please!

This is a direct appeal from Managing Editor George Sullivan. He says one of the toughest things to get people to do is to hang on to old pictures. Result is that when someone wants to do a pictorial history, there's a dickens* of a job getting old photos, sketches, etc. George says this because . . .

... next year THE IRON AGE will be 100 years old. We are celebrating this historic event with a special ANNIVERSARY ISSUE which is the most ambitious project we have ever undertaken. Planning is already well underway to make this issue a spectacular landmark for the whole metalworking industry. It will contain over 600 pages, total investment will be over a quarter million dollars.

To get back to George. In compiling the pictorial histories of the industries we serve—iron and steel, nonferrous metals, metal finishing, foundry, welding to name a few—George needs pictures. And he needs help. If you know of any old photos or drawings—and they can go back to 1855—George would gratefully like to hear about them. He doesn't want originals now. Just wants to locate them, see what they look like from copies if possible. How about it? Will you help us out?

(*George used this word. We didn't. Got a lickin' once for using it.)

The Joke

One joke and a long puzzler. That's the new Fatigue Cracks with the new format. Here's the joke:

The head of a large company called the bright young man of his organization into his office and said to him: "John, I don't know whether you have realized it or not, but I have been closely watching your activities here. You came into our organization just a short two years ago, as a mail clerk. Before

by William M. Coffey

very long you were made head of the mail department. Then you rose in rapid succession, to office manager, assistant advertising manager, advertising manager and finally vice-president in charge of sales. Now I have just learned that I am to become Chairman of the Board of our company, and I am going to name you to be our new president."

To which the young man replied, presumably with becoming modesty: "Gee, thanks, Dad."

It's a hot day. Can't do better than that.

Puzzlers

Those seven boys with the marbles . . . August 12 puzzler. Answer: 449, 225, 113, 57, 29, 15 and 8. Now that wasn't too hard, was it? Winners: Ole Gus (still mad at income taxes. Strange); Arland W. Rike, General Motors; C. W. Scoville; P. A. Smith, Winchester Repeating Arms; Karl Klein, Foreign Operations Administration; Sol Siegal, Lincoln Steel Products Co.; and, of course, Ken Hofer, who sent the puzzler in.

New Puzzler

A lady stepped into a grocery store and laying a certain amount of money on the counter said to the clerk, "A pound and a quarter of cheese, please."

The clerk took his big knife and cut off a piece of cheese. Laying it on the scale he said, "This will cost you 25¢ more than you have laid on the counter." The lady took back 10¢ of the money she had laid on the counter and said, "Cut that piece in half and I will take it."

Assuming that the money originally laid on the counter was the right change for 1¼ lb of cheese, how much cheese did the lady finally buy and how much money did she lay on the table? Many thanks to B. J. Broeker of the White Motor Co. for this teaser.

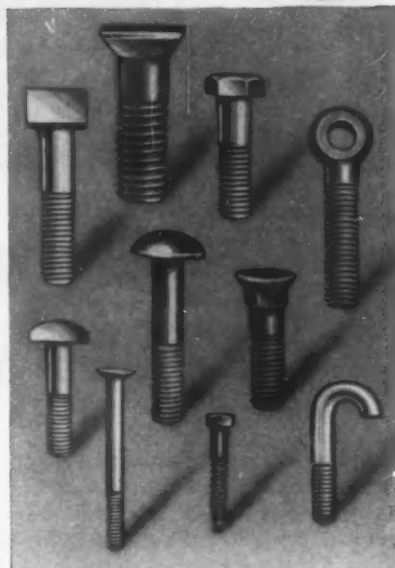
Threaded Specialties

lower cost
TEE BOLTS
by an
exclusive method

Among Pawtucket's many specialty products are these lower-cost tee-head bolts. Pawtucket's exclusive production method keeps cost low, dimensional accuracy unusually high and strength above standard.

Pawtucket tee head bolts are made in standard sizes ¼" and larger, or to your specifications. In any size, you can depend on a uniform Class 3 fit, if required.

All standard steels, stainless steels and non-ferrous metals, including Titanium



BETTER BOLTS SINCE 1882

PAWTUCKET

MANUFACTURING COMPANY

327 Pine St. • Pawtucket, R. I.

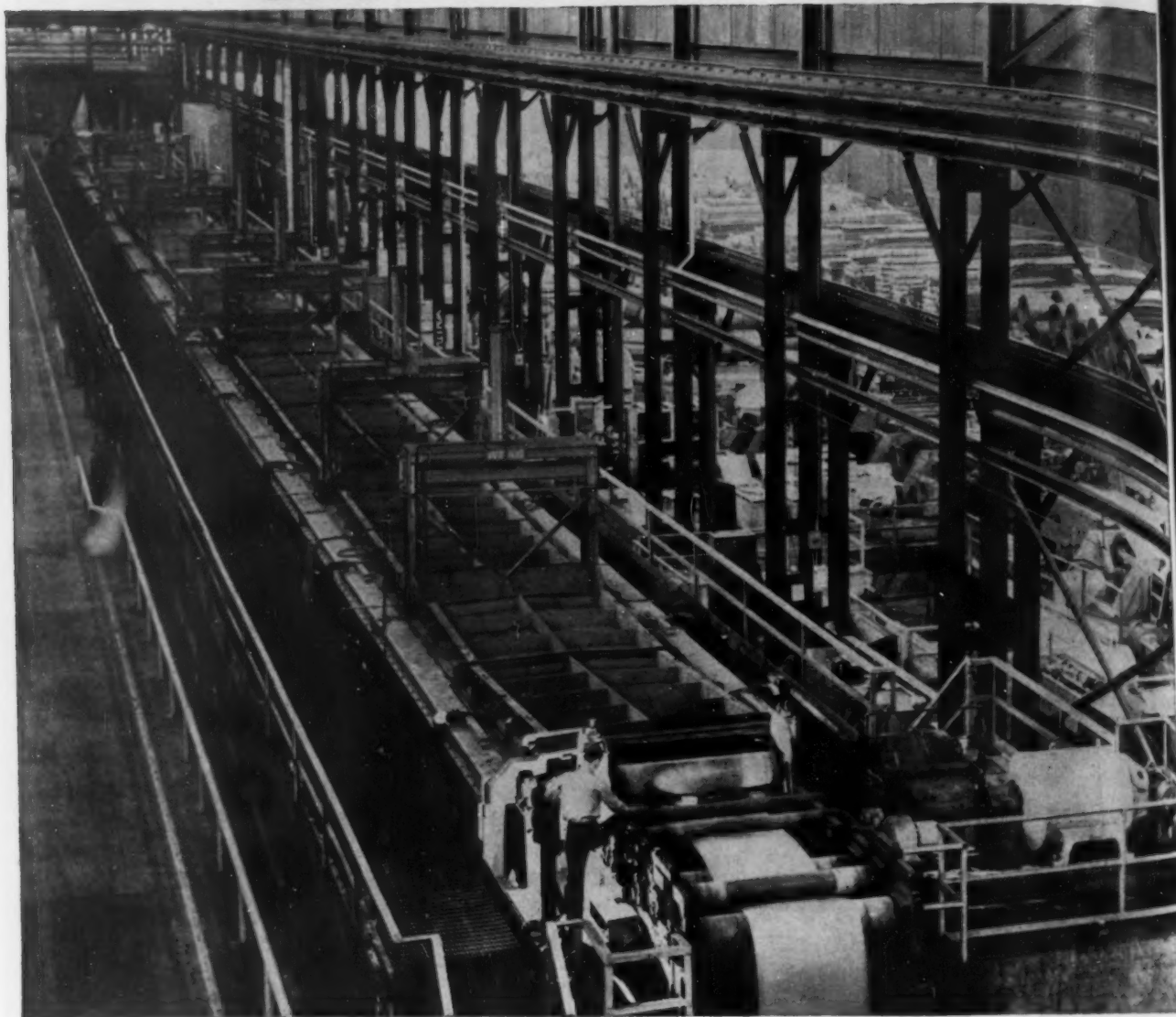
THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.

"The Bolt Man"

RESEARCH KEEPS

B.F. Goodrich

FIRST IN RUBBER



A rubber sandwich that's a steel mill's dish

RUSHING through that tank of hot acid is a long ribbon of steel on its way to being shaped into automobile bodies.

This job used to be done in leaky wooden tanks. Then tanks of brick and concrete were tried, but they would crack from the heat.

B. F. Goodrich engineers went to work on this and came up with a new kind of rubber lining that solved the problem. The lining, called Triflex, is not one layer of rubber, but three—hard rubber for acid resistance sandwiched between soft rubber for protection—with expansion joints which

let the rubber expand and contract with the steel to which it is attached. On top of this, there's brick sheathing to prevent the moving steel from tearing the rubber.

Acid leaks stopped wherever the B. F. Goodrich "sandwich" lining was used. Costly shutdowns for tank repairs were a thing of the past.

Today this B. F. Goodrich lining is used in the newest, most modern mills, like Pittsburgh Steel's Allenport Plant shown here. And in some places, the original Triflex lining is still being used after 15 and even 20 years. When you buy B. F. Goodrich lining you buy years

of engineering background with it—experience that guarantees your lining will be exactly fitted to meet all the special requirements of your work. You buy something else, too—assurance of satisfactory performance that can come only with a product that has proved itself by years of success in actual use. *The B. F. Goodrich Company, Dept. M-309, Akron 18, Ohio.*

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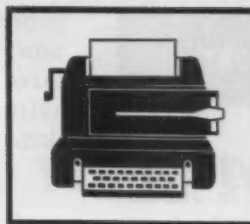
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NEWS SECTION

Special Report

Steel Comeback Now in the Making

Some reports indicate steel consumers will be back to normal soon . . . Mill purchases have been no indication of manufacturing rate . . . Indicate increased buying of sheets, bars—By K. W. Bennett.

♦ WHICH way are inventories going? With inventory reduction a standard practice across much of industry in first half 1954, a few hopefuls were examining the weather sign last week for indications that:

(1) Inventory reduction may have run its course.

(2) With manufacturing out of inventory no longer possible, consumers might be adjusting their steel purchasing more closely to their finished goods output, boosting raw steel buying whether their own business went up or not.

Some Are Strong

First returns hint at a split. Structural, 6.3 pct of 1953's total steel tonnages shipped, suggested a very gradual decline. The same for plate (9.6 pct of 1953 tonnage shipped) and many of the bar sizes.

Cold-rolled sheets (14.9 pct of 1953 tonnage) and a portion of the hot-rolled bar output (11.6 pct of 1953's total steel) had improved chances in the farm equipment and appliance markets.

Construction equipment looked better from a steel purchasing standpoint, industrial engines, automotive components looked like good bets. Wire reinforcing mesh continued hale, along with reinforcing bar, galvanized sheet, seamless and electric weld tube.

Who Will Buy

Purchasing agents on the up side were saying:

A farm equipment producer, and a big one, will boost steel ordering

in September by 5000 tons per month, or 12 pct over his first half buying rate. During first half he's been reducing raw steel inventories by 7000 tons monthly, has culled 42,000 tons from inventory in first half.

A small farm equipment producer has reduced his inventory from a normal 6000 tons to 2000 during second quarter 1954. He's at the bottom of the barrel, must increase his stocks, and is now faced with an unexpected sales climb. He and other agricultural buyers consumed 3.18 pct of the nation's steel output in 1953.

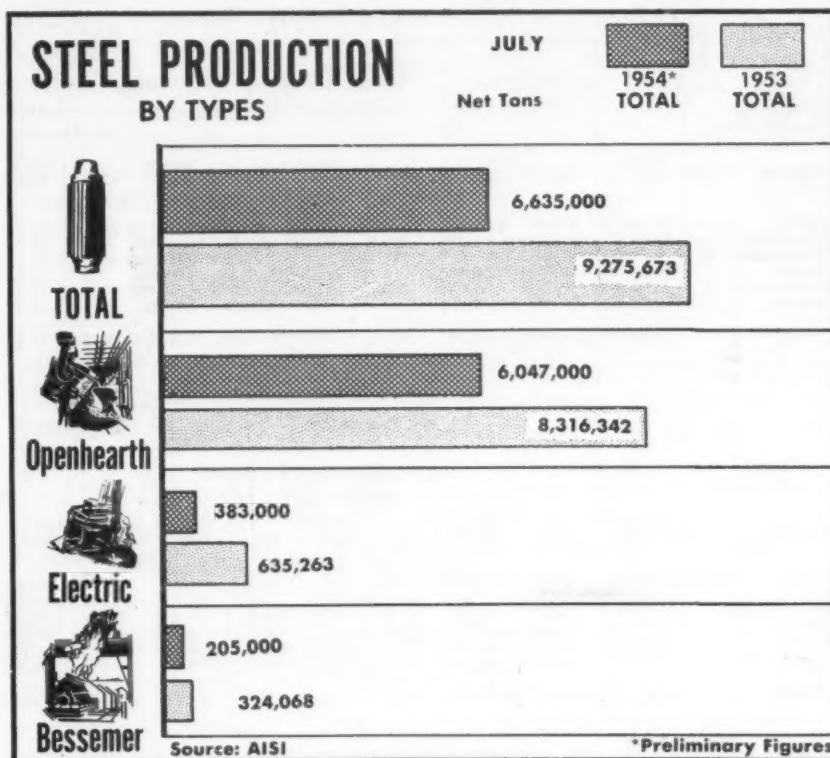
An appliance producer will move from 3300 tons during Au-

gust (mainly cold-rolled sheet) to 4000 in September. This is minimum buying based on going sales.

A construction equipment producer who has carefully reduced his inventory of plate, bar, and some structural in first half 1954, will move it up by 15 pct in second half, beginning his buying increase in September.

A major auto component supplier will increase his sheet procurement by 20 pct in mid-September. A reinforcing bar fabricator says he will up his rebar procurement by 20 pct beginning in September after a 25 pct inventory reduction in first half.

A builder of heavy power equip-



SPECIAL REPORT

ment who has dropped his inventory from 18,000 tons in January to 10,000 in July is beginning to move up. His purchases of bar, sheets, and some plate, will move up by 20 pct. This is for business on the books, not anticipated.

In each case, mill purchases did not reflect the consumer's manufacturing rate at any time during first half. He was carefully reducing inventory into July.

But Some Cut Back

But these indications of strength won't take steel out of the woods. On the debit side of the picture:

A large steel warehousing firm will reduce its inventories by 18 pct in second half 1954, particularly in bar and plate, will buy 10 pct less steel in second half than was purchased from mills in first half of this year.

With warehouses last year consuming about 20 pct of the steel produced, the importance of a warehouse decline can be seen. Their business levels have been

improving, but the need to maintain a high turnover rate, say three to four times yearly, is requiring further inventory reduction.

Plate, Structural Dip

An important midwestern structural fabricator is reducing inventory as his backlog shrinks. He has no need for panic. He has 4 months work on his books. But by fourth quarter, the company will have dropped structural procurement by 25 pct below the opening months of 1954. Construction and maintenance buyers in 1953 consumed about 17.75 of the steel tonnage produced in 1953.

A tank fabricator, member of an industry that's been enjoying brisk business for a considerable period, has instructed his purchasing agent to slow plate buying after September. With a 45-day inventory, this firm will drop to 30 days. Its going plate purchases will decline by 15-20 pct. Plate represented roughly 10 pct of the steel tonnage shipped in the U. S. in 1953.

Outlook for plate and structural, then, suggests a gradual decline. For sheet and hot-rolled bar, a

gradual increase, hampered by warehouse cutbacks (they are major users), but aided by an unusually early automotive buying season.

Aid for Shipbuilding

Private financing for ship construction is encouraged by a measure cleared by Congress last week for White House signature.

The bill, H. R. 9987, liberalizes terms under which the government will insure all or part of shipbuilding costs. It does not, as its backers point out, provide 100 pct insurance of any except special-purpose vessels declared by the Defense Secretary to be essential.

Created by the measure is a Federal ship mortgage insurance fund to be administered by the Commerce Secretary. Funds in use at any one time may not exceed \$1 billion.

Normal practice will require shipowners to make a down payment of at least 12.5 pct of costs, reducing the balance to not more than 87.5 pct. Commerce Secretary is authorized to insure 90 pct of this unpaid balance.

He may also provide 100 pct insurance of interest.

IRON & STEEL: July Output By Districts

As Reported to the American Iron and Steel Institute

BLAST FURNACE —NET TONS	PIG IRON			FERROMANG., & SPIEGEL		TOTAL			
	Annual Capacity	July	Year to Date	July	Year to Date	July	Year to Date	Pct of Capacity	
								July	Year to Date
DISTRICTS									
Eastern	17,261,850	833,335	7,051,683	11,326	134,068	894,661	7,185,751	61.1	71.7
Pitts.-Yngstn.	29,501,270	1,561,958	11,459,209	19,345	141,450	1,581,303	11,600,689	63.2	67.7
Cleve.-Detroit	8,714,680	479,631	3,345,862			479,631	3,345,862	64.9	66.1
Chicago	16,371,250	1,009,893	7,308,835			1,009,893	7,308,835	72.8	76.8
Southern	6,273,080	414,321	2,786,145	5,437	53,048	419,758	2,839,193	78.9	77.9
Western	3,579,260	240,938	1,537,586			240,938	1,537,586	73.3	68.2
TOTAL	82,001,390	4,590,076	33,469,300	36,106	328,566	4,626,184	33,617,686	66.6	71.0

STEEL —NET TONS	TOTAL STEEL*							ALLOY STEEL	
	Annual Capacity	July	Year to Date	Pct of Capacity		Index**		July	Year to Date
				July	Year to Date	July	Year to Date		
DISTRICTS									
Eastern	25,861,060	1,314,920	10,151,707	60.0	67.6	94.8	107.1	67,873	546,633
Pitts.-Yngstn.	44,348,060	2,201,665	17,590,696	58.6	68.3	77.7	90.7	266,269	2,280,297
Cleve.-Detroit	12,791,760	629,701	4,868,536	58.1	65.8	103.0	116.4	51,546	356,408
Chicago	27,371,700	1,577,018	12,051,262	66.0	75.8	101.3	113.2	93,146	660,663
Southern	6,932,340	448,849	3,045,798	76.4	75.6	128.8	127.6	6,016	47,919
Western	7,022,470	485,444	3,051,230	76.5	74.8	121.1	116.6	4,980	46,460
TOTAL	124,320,410	6,627,597	50,759,229	62.9	70.3	93.2	104.3	489,830	3,940,381

* Included under Total Steel.

** Based on average production of the three years 1947 through 1949 as 100.

◆ COLLE... offered a recruiters with broo interview crops of seniors.

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♦ COLLEGE campuses have long offered a fertile field for personnel recruiters who sow the ground with brochures, cultivate it with interviews and reap rich annual crops of eager, technically-trained seniors.

Only recently, however, has there been any attempt to set up channels of communication between personnel departments, hungry for trained men, and the thousands of college-educated servicemen stationed throughout the U. S.

A placement bureau, set up by soldiers at Army Ordnance's Aberdeen (Md.) Proving Ground in off-duty hours, has become a supply line between industry personnel offices and a ready pool of technically-skilled manpower.

Find Excellent Prospects

Thirty-seven firms responded to the placement bureau's invitation, sent representatives who interviewed some 405 men at Aberdeen in 4 months beginning last spring.

Personnel men found the prospects so rich that Sgt. Bob Rea, director of the placement service, estimates that 50 pct of the interviewees were offered 10 or more jobs.

The GI jobseekers are engineers, chemists, physicists and mathematicians doing development, testing, research and teaching work for the Ordnance Corps.

Seek Popular Employers

Sgt. Rea organized his Scientific and Professional Placement Service in December 1953, drew up a list of 204 companies most likely to employ technically trained men.

Sgt. Morton H. Hochstein, in civilian life a free-lance writer, is currently stationed at Aberdeen Proving Grounds. Views expressed in this article are his own, not the Army's.

A questionnaire carrying these names was distributed to interested officers and enlisted men who were asked to check firms where they would most like to be employed on return to civilian life.

Ninety-four questionnaires were counted and Westinghouse, with 45 checks, drew top rating. General Motors was second in prefer-

MANPOWER: Tap GI Talent Pool

Thousands of servicemen seeking to market their skills, can't reach employers . . . GIs at one post organize to match jobs with men, place many—By Sgt. M. H. Hochstein.

ence with 42 checks, and General Electric ranked third with 40. Others rating high interest were: Ford, Chrysler, IBM, RCA, Du Pont, Alcoa, Bell Laboratories and Sylvania Electric. All companies receiving 10 or more checks were invited to send representatives to interview qualified, interested men.

Hire High Percentage

Results of a second survey taken among the men went to the 75 companies selected, showed the number of professionals, their fields, degrees and months in which they were "graduating" from service. This survey turned up many servicemen with MAs and doctorates, though bachelor's degrees predominated.

With the survey and invitation went a letter briefing personnel departments on lodging, dining and transportation at Aberdeen, and requesting company literature and employment applications.

When a company representative arrives at Aberdeen he may find an audience ranging from a half-dozen men to 60 or 70. One personnel man told Sgt. Rea he was disappointed to find such a small turnout (10 men) after speaking to

an audience of 60 at a nearby college. A week later, however, the same man wrote Rea that his firm was interested in 7 of the 10 Aberdeen men, just one man from the group of 60.

Credit Service Experience

Among the participating companies were several automotive firms that picked up specialists who had been testing motor vehicles and tanks in Aberdeen's extensive Development & Proof Services section.

Cooperation from the interested companies was outstanding. One oil firm wrote Sgt. Rea, offering to bankroll the placement service. Another oil company called from Texas, without any prior contact on Rea's part.

Salaries offered averaged \$385 to \$400 per month for a Bachelor of Science degree. A Master's degree brought approximately \$25 more. Almost all of the 37 participating companies planned to credit the ex-GI's military service with \$20-\$25 more per month, started most men above the \$400 per month mark.

Marx Gets BDSA Post

Newly appointed as director of the Metalworking Equipment Div., Business and Defense Services Administration, is Graham E. Marx, of Cincinnati.

On leave from his job as vice-president and general manager of G. A. Gray Co., machine tool manufacturers, the appointee succeeds Ralph E. Cross, of Detroit. Mr. Cross recently was named an assistant administrator of BDSA.

Mr. Marx is a registered professional engineer in Ohio. He holds two patents relating to special forms of production tools and machine tool drives.



BENEFITS: Fringe Costs Soar

Industry now pays \$720 per worker per year for fringe benefits . . . Cost averages nearly 20 pct of total payroll . . . Expenditure will keep rising—By E. C. Kellogg.

◆ FRINGE BENEFITS now cost industrial employers an average of \$720 per employee per year, or about 20 pct of their total payroll. Overall cost of these payments by business and industry is running between \$20 billion and \$25 billion per year which makes the term "fringe" benefits one of the most glaring misnomers in the business vocabulary.

And it seems certain fringe benefits will become even more important—and more costly—as time goes on.

It is now standard union policy to include demands for greater fringe benefits in wage contract negotiations. This trend partially reflects workers' desire for more job and retirement security, also results from management's com-

parative softness in giving in to demands for increased fringe benefits, particularly pensions.

Many companies are operating on the principle that pensions are an expense they won't have to worry about until tomorrow, so they prefer to give in on pension requests than on demands for higher wages which would raise production costs immediately.

Cost Nearly Doubled

Union's outstanding success in obtaining fringe benefit concessions is indicated in a recent U. S. Chamber of Commerce study which shows cost of these payments for 130 companies increased from 15.2 pct of payroll in 1947 to 20.2 pct in 1953.

On a dollar per year per em-

ployee basis cost of fringe benefits for these firms went up from \$422 in 1947 to \$817 in 1953.

Other major findings of the Chamber of Commerce study:

(1) For 940 companies average fringe benefit payments amounted to 19.2 pct of payroll, or 34.6¢ per payroll hour. Counted as fringe benefits in this survey are payments employers are required to pay by law, pensions, paid rest and lunch periods, payments for time not worked (vacations, etc.), profit sharing payments, bonuses.

(2) Fringe benefits are usually higher than average in large companies, lower than average in small companies. Highest payments are made in the North East, followed by the East North Central, Southeastern, and Western regions.

(3) 81 pct of the companies surveyed have some sort of pension plan. Cost of these plans is 4.7 pct of total payroll.

(4) Most expensive of all fringe benefits is payment for "time not worked" which costs an average of 6.2 pct of payroll. Included in this category is vacation pay (3.3 pct of payroll), payments for holidays not worked (2.1 pct), sick leave (0.6 pct), pay during periods when workers are not on the job because of National Guard duty, jury duty, etc. (0.2 pct).

Metalworkers Get Less

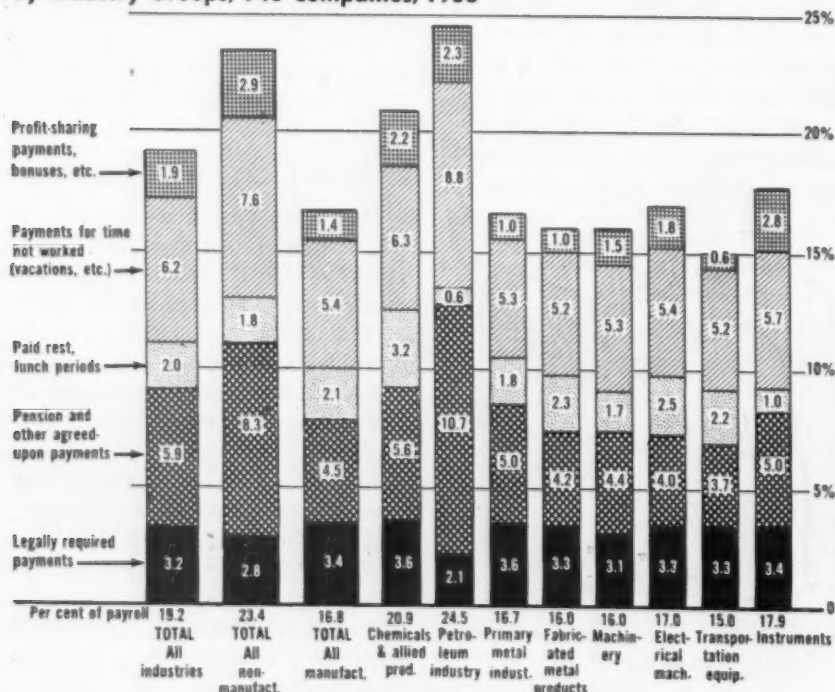
Cost of fringe benefits varies widely from industry to industry and from firm to firm. One petroleum company reported payments amounting to 55 pct of its payroll which totaled more than \$2700 per employee per year. At the other extreme was a warehouse which paid less than 5 pct of its payroll for fringes.

Generally manufacturing industries pay less (16.8 pct of payroll) for fringes than nonmanufacturing firms (23.4 pct). And cost to most metalworking firms is less than average for manufacturing industries, ranging from payments of 15 pct of payroll for transportation equipment industries to 17.9 pct for instrument firms.

Expenditure on fringes is greatest in the petroleum industry

FRINGE BENEFIT PAYMENTS AS PER CENT OF PAYROLL

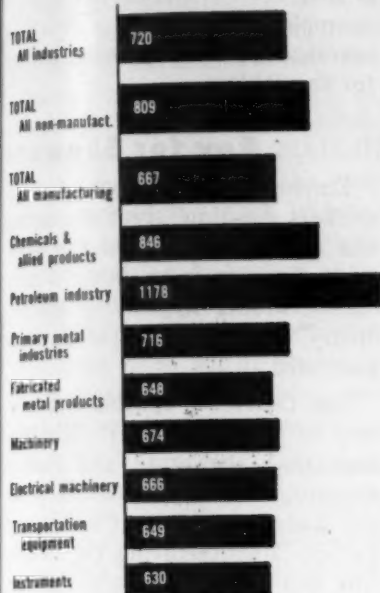
By Industry Groups, 940 Companies, 1953



Dollars Per Year Fringe Payments Per Employee

BY INDUSTRY GROUPS, 1953

Total Fringe Payments \$ Per Year Per Employee



where the cost runs \$1178 per employee per year. For metalworking industries cost is: Primary metals, \$716; fabricated metal products, \$648; machinery, \$674; electrical machinery, \$666; transportation equipment, \$649; instruments, \$630.

Doesn't Give True Picture

Growing importance of fringe benefits as pointed out in the survey indicates there is a serious gap in the government's series of economic statistics which do not usually include data on fringe benefits. With payments of this type accounting for 20 pct of total payroll cost, reports on weekly wages and hours worked no longer give an accurate picture of worker income or the cost of labor to employers.

Making Pilot Study

Bureau of Labor Statistics is currently conducting a pilot study of fringe benefits and may later decide to include statistics on these payments in some of the various economic reports put out by the government.

(Complete report on fringe benefits is available from Economic Research Dept., Chamber of Commerce of the U. S., Washington 6, D. C. Cost is \$1 per copy.)

Social Security:

Extension of benefits covers
58 million people.

Expanded eligibility provisions which now put a total of about 58 million persons in line to get Federal Social Security benefits represents a considerable triumph for the Eisenhower administration.

The White House had called for inclusion of some 10.5 million additional persons to the rolls. Provided in the new congressional action is coverage for some 10 million, especially professional persons, farmers, and farm employees.

Newly eligible are engineers, accountants, and architects.

Among those still excluded are doctors, dentists, lawyers, optometrists, firemen, and policemen.

Benefits for those now covered are raised. Increases for individuals will range from \$5 to \$23.50 per month. First evidences of these boosts are to be delivered to beneficiaries early in October.

Will Cost More

Beginning Jan. 1, the Federal tax to support the Old Age and Survivors Insurance program will apply to the first \$4200 of earnings. This means an initial added cost to employers, who must match the payroll tax, or \$12 a year for each employee earning a minimum of \$4200.

Provided by the new congressional action is a floor of 72 years in the age to be reached by retired

persons who may earn an unlimited amount without losing social security benefits. Retired men and women between the ages of 65 and 72 will be able to earn up to \$1200 annually without forfeiting benefits.

At present, anyone on the Old Age Insurance rolls must be 75 before he may earn an unlimited sum without danger of losing government benefits. The maximum figure on earnings of beneficiaries between 65 and 75 now is \$75 a month.

Jobless:

Extend unemployment insurance
coverage to 40 million.

On Jan. 1, 1956, at least 40 million members of the American working force will be eligible for unemployment insurance benefits.

This is the forecast of U. S. Labor Dept. on the basis of congressional passage last week of a bill to extend coverage to an additional 3.6 million workers, including 2.3 million Federal employees.

Under terms of the measure, H. R. 9709, persons working for firms with a minimum of four employees will be added to the eligible list. At present, the states are required to provide coverage for persons only in businesses with eight or more employees. Many states, however, have already provided coverage for workers in firms with less than that number.

First Extension Since '35

The broadened eligibility does not take full effect immediately. Federal employees are being brought into the system on Jan. 1 next year, but non-Federal workers will not be added until Dec. 31, 1955.

First major extension of unemployment insurance coverage since the program was started in 1935, the new law was passed shortly after President Eisenhower signed Public Law 567. This latter measure deals with financing



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of the program for insuring the jobless.

Its most important requirement is that revenues from the federal unemployment tax be earmarked specifically for purposes of caring for the jobless.

Pay for Showers

Employers must pay factory workers for time spent showering and changing clothes at the plant if the activity is an integral part of the worker hygiene of the industry, a U. S. Court of Appeals has ruled.

The Court, in upholding Secretary of Labor James P. Mitchell, finds that showering and clothes changing were made necessary by job hazards at the Cumberland Battery Manufacturing Co., Nashville, and therefore must be counted as time worked under the wage-hour law.

At the battery plant, the "wash-ups" are designed to protect workers from hazards of lead poisoning, the Court finds, and therefore a "principal" and not a "preliminary" activity of the job.

Bedell Smith with AMF

Gen. Walter Bedell Smith will retire as Under Secretary of State at the end of September to become vice-chairman of American Machinery & Foundry Co. A former four-star general, he began his long career in the government service as a private in the U. S. Army.



THE IRON AGE

MERGER: Stockholder's Choice

Over 80 pct of Packard, Studebaker shareholders vote to unite . . . Stocks split to adjust differences . . . Nance sees key to profit in combine economies—By R. D. Raddant.

♦ **STUDEBAKER** and Packard stockholders looked at the economic facts of life last week and decided that a corporate union was the best chance for survival in the increasingly competitive auto industry. Result was a thumping approval of forming the new Studebaker-Packard Corp.

For the record, Packard stockholders voted a total of 12,016,402 shares, or 82.9 pct of the company's outstanding stock, in favor of the combination. This stockholders' meeting took place at the Packard offices in Detroit. In Wilmington, Del., 1,955,320 shares, amounting to 83 pct of Studebaker's outstanding stock, also favored the proposal to unite.

Many Voice Opinions

Some of the slings and arrows that executives expose themselves to at open meetings of stockholders were apparent at the Packard meeting, held in the highly accessible Detroit office of the company. Minority rights were exercised to the limit.

They ranged from naive but sincere dissenters to sheer cranks and publicity seekers as they voiced their democratic right as stockholders not only to vote but express their opinions at the special meeting.

Without exception, James J. Nance, Packard president and now head of the combination, accorded each his opportunity to be heard, explained the background of each proposal, and gave the proxy holders a brief lecture on automotive competition.

He cut short discussion only when comments become repetitious and, in his own words, "because we're not getting anywhere."

Question Stock Values

In brief, complaints originated from the stockmarket quotations which showed that Packard stock went down while Studebaker stock went up after the boards of directors approved the merger.

One white-haired lady rose to her feet as the first of four proposals were read before voting.

"I have owned 300 shares of Packard stock since 1907," she stated. "I feel the stock shouldn't

be reduced and that we should get more for our stock. Packard isn't taking over Studebaker, Studebaker is taking over Packard."

More Studebaker Capital

Mr. Nance pointed out that in the new Studebaker-Packard Corp., Studebaker provided 53 pct of the working capital, that Studebaker had showed greater earning power over a period of years, and that Studebaker had 2500 dealers compared to Packard's 1200. The latter is a particularly important point to the luxury car maker which badly needs more outlets.

Importance of the stock market to the dissenters was indicated by applause which greeted the statements of another opponent, who admitted he favored the merger, but not the terms.

"Was this an equitable deal?" he asked. "The market answered immediately. Packard went down, Studebaker went up. This is a free gift of \$20 million to the Studebaker crowd."

"Are we here to play the market or to preserve the company?" was Mr. Nance's counter question.

Must Cut Costs

He pointed out that to stay competitive Packard had to get low

costs of production and that this can be accomplished only through greater production by interchangeability of parts. He added that tooling costs have risen 400 pct in recent years, making this a must in the auto industry.

There was no doubt that Packard's excessive number of outstanding shares and low initial market value made it difficult to explain the fluctuation in the market which prompted most of the dissent. The root lay in the five-for-one reverse split to get Packard's shares to a more realistic market level. Objectors could not understand why the split was not on direct ratio between market value of the stocks.

Mr. Nance bristled slightly but did not lose his temper at one point. One vocal objector charged that Packard directors had sold Packard stock and bought Studebaker shares to make a killing on the deal. He was firmly informed SEC regulations ruled that out.

Guarantees Fighting Chance

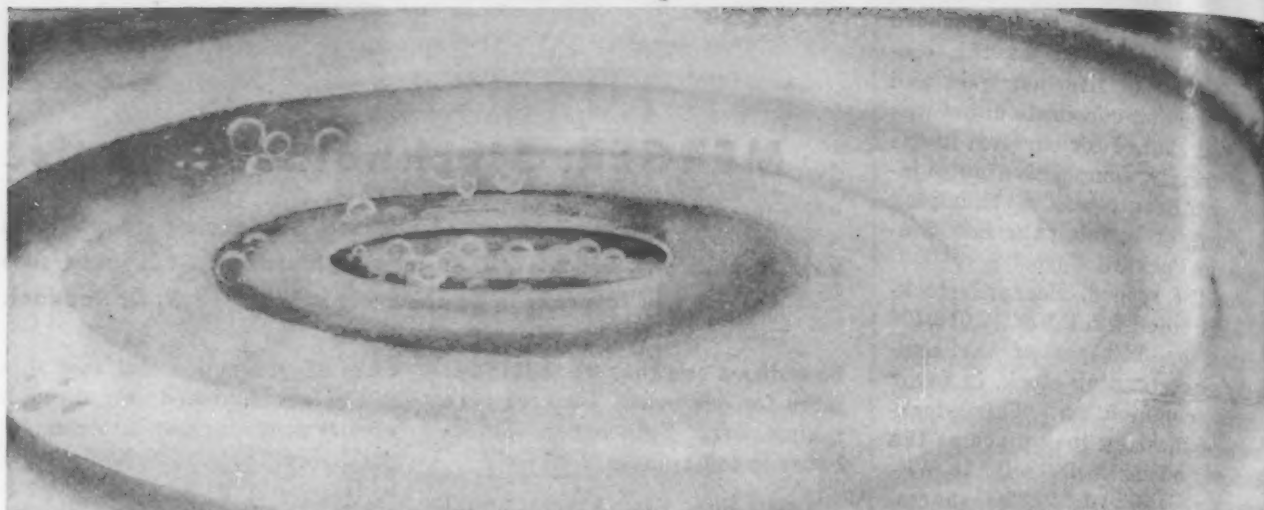
In spite of the optimism that prevailed with the merger, many of Mr. Nance's statements indicated that the merger only guarantees the new company a fighting chance to get back into the black.

It will take time before interchangeability of parts can show dividends. However, addition of healthy dealerships will be of immediate value to Packard in particular. And other advantages of combined forces should make the new combination a factor in defense, another important market.

There was no post-meeting celebration, no toasting of the new company. Executives felt it was not a time for self-congratulation, but the signal to get to work.



"Wouldn't Public Relations approve it?"



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♦ **BUSINESSMEN** tallying up Washington's hits and errors will find that the 83rd Congress—from a business viewpoint—did a reasonably good job compared to other recent sessions.

Biggest break for business came this year in the new tax revision bill, cuts in excises, and the resulting slashes in government expenditures. Other business boosts include liberalized home buying terms, expanded roadbuilding and ship construction measures; easier securities marketing laws and private development of atomic power.

Business failed to get trip-leasing legislation; absorption of freight to meet competition, or faster approval of rail rate increases.

New tries will be coming in January for Taft-Hartley revisions, freer foreign trade, additional tax liberalization, and postal rate changes which failed in this session.

Here's a subject-by-subject summary of major legislation by the 83rd:

Tax Revision — Simplified tax laws, lowering taxes for all corporations, partnerships and individuals, resulting in \$1.3 billion a year savings.

Appropriations—Voted \$47.9 billion in new money to run the government—\$2.3 billion less than President Eisenhower asked and \$6.8 billion less than was appropriated last year.

Excises—Gave \$1 billion in excise tax cuts, despite Administration opposition, reducing top to 10 pct.

Debt Limit—Voted the Administration a temporary \$6 billion hike in national debt ceiling, making top \$281 billion, until June 30—Treasury had asked \$10 billion rise.

Atomic Energy—Authorized private industry to participate in nuclear development, with some limitations on patent rights, and permitted government to undertake some commercial development.

GOVERNMENT

CONGRESS: Business Did Well

Final tally on 83rd Congress shows business-backed bills generally fared well . . . Tax revision, excise cuts, government economies major actions—By N. R. Regeimbal.

Taft-Hartley—Blocked Administration-backed changes in the basic labor law.

Unemployment Pay—Cut from 8 to 4 the minimum number of employees a firm must employ to come under unemployment compensation terms; increased benefits from \$22 to \$30.

Housing—Granted lower down-payments and liberalized mortgage terms; approved 35,000 public housing units for this year.

Highways—Approved spending \$966 million a year for the next 2 years, an increase of 30 pct over current aid to states.

Seaway—Provided \$105 million to start construction jointly with

Canada on St. Lawrence Seaway.

Foreign Aid—Approved \$5.2 billion for continued aid to friendly nations—\$2.7 billion in new money—with the emphasis on military aid and more stress on aid to Asia.

Shipbuilding—Provided \$175 million for merchant marine re-vamping; approved government insurance to encourage private ship financing; ordered American shippers be allowed to carry 50 pct of all U. S.-financed cargo.

Securities—Amended Securities & Exchange Act to permit easier and faster marketing of new securities.

Census—Authorized and granted funds for censuses of manufac-

Box Score on New Federal Appropriations

In Millions of Dollars

Agency	Last Year	Ike Asked	Congress Voted
Treasury	612	579	578
Post Office	2,832	2,760	2,755
State	92	116	114
Justice	179	178	177
Commerce	815	930	837
Army Civil Functions	440	465	457
Interior	434	422	406
Agriculture	718	689	724
Defense	34,372	29,887	28,800
Independent Offices	5,700	5,930	5,652
Legis. & Judiciary	96	102	98
Labor	271	313	312
Health, Educ., Welfare	1,738	1,653	1,663
D. C. Govt.	12	22	22
Foreign Aid	4,531	3,438	2,781
Supplemental	1,694	2,558	1,669
*TOTALS	54,611	50,131	47,851

* Does not include \$7,179,176,562 in permanent and indefinite appropriations for debt payments and old age pensions.

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TYPE "S-A"
STEAM ATOMIZING
OIL BURNER



**VIRTUALLY IMPOSSIBLE
FOR ANYTHING TO CLOG
OR GO WRONG . . .**

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The popular NATIONAL AIROIL Steam Atomizing Oil Burner thoroughly atomizes and completely burns the lowest and cheapest grades of fuel oil or tar . . . requires only minimum supervision and maintenance. Only slight oil pressure and temperature is needed . . . and internal atomizing venturi feature assures a low steam consumption. NATIONAL AIROIL Type "SA" Oil Burner is adaptable to all types of industrial heating, power or process furnaces . . . is suitable for firing above stoker grates on conversion to oil.

Other "SA" modifications designed for: the burning of Colloidal fuel ("SAR") — Large capacity operation ("SAL")—Sludge burning ("SAD")—Combined steam and mechanical atomization (Dual Stage).

WRITE FOR BULLETIN 21

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BURNERS for industrial power,
process and heating purposes

STEAM ATOMIZING OIL
BURNERS

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Steam Atomizing

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DUAL STAGE, Combining
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Atomization

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BURNERS for small process
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INDUSTRIAL OIL BURNERS, GAS BURNERS, FURNACE EQUIPMENT

GOVERNMENT

turing, business and mineral industries.

Antitrust—Senate dropped House-passed bill increasing fines for Sherman Act violations from \$5000 to \$50,000; killed bill to legalize good-faith price discrimination and basing point procedures, dropped bill to ban auto bootlegging.

Transportation—Killed bills to require quick action on rail rate increases and to permit truck tripling.

Social Security—Increased benefits and added 10 million persons to the old age survivors' insurance program.

Foreign Trade — Rejected the Administration's 3-year plan for cutting tariffs 15 pct by extending old reciprocal trade law intact; increased lending authority of Export-Import Bank by \$500 million.

Alien Property—Refused to permit return of \$500 million worth of property seized during World War II to German nationals.

Natural Gas — Exempted interstate transportation of natural gas from federal regulations if such movements are already controlled by states.

Public Lands—Approved multiple mineral development on 60 million acres now held exclusively for oil and gas development; liberalized leasing and option restrictions for oil and gas producers.

OK Business Census

Funds for the much-needed census of business, manufacturing and mineral industries won congressional approval as the lawmakers approved a \$1.6 billion supplemental appropriation bill.

Senate-House conferees agreed to the Senate proposal to grant the Commerce Dept. the full \$8.4 million fund to start the project.

The census, to be taken next year to record business in 1954, will cost a total of \$13 million before they are printed and distributed in about 2 years. The census of manufacturing will cost \$3.4 million; business, \$9 million, and mineral industries, \$685,000.

♦ **MAKERS** of industrial pumps are watching the flurry of inquiries that began 30 days ago with hope. But only a few are willing to bet that this is the beginning of a fall upsurge. Just maybe.

"I feel like a boy scout out in the woods on a wet night with one match," said a veteran sales manager last week. "I've got something that looks good—but I had better be careful."

Meantime, he and his competition were doing some careful priming of sales, with results that are already apparent. Expanded sales staffs, where they occur, can be measured in direct increases in sales volume. Indicating that (1) a customer may be hard to sell, but (2) he can be sold if the job is worked at.

Situation Not Bad

New models have boosted sales among several producers. And producers who've newly entered the pump field (pumps have interested a number of firms which are in the process of diversifying output) find customer lists still expanding. One of these is up by 35 pct in '54—another, by 50 pct.

With delivery continuing at 2-3 weeks on shelf items, and special pumps running 2-3 months in delivery, the situation is regarded as certainly not bad. The same delivery could be obtained through most of '53. And 1953 was a pretty good year. Monthly average pump sales, as reported by the Hydraulic Institute, came up from a 1949 low of \$3,032,000 to a 1951 high of \$6,684,000 per average month.

Though sales fell for the industrial pump by 10.8 pct—to \$5,969,000 per average month—in 1952, they held within a fraction of a percentage point of that figure through at least the first 9 months of 1953. Most pump builders agree that the industry didn't feel the latter 1953 industrial slowdown until January of this year.

Factory Buying Down

Hit it did, however, at the turn of the year. Estimates of the industry drop range from 10 to 20 pct. This is an estimate by men within the industry, but reports on their own company activity range from one firm that is running 50

MARKETING

PUMPS: Primed for Mild Surge

Industrial pump producers cautiously optimistic on fall sales prospects . . . Business is off 10 to 20 pct from '53 . . . Special pumps gaining—By K. W. Bennett.

pct ahead—but doesn't expect to hold it for second half—to 25 pct beneath the monthly average of last year.

Their customer lists suggest that factory installations are running well beneath last year's rate. Light pumping equipment for home use is running slightly ahead. So are standard pumps for public building and utility use, and this category appears to be in a period of gradual buildup that will continue through 1955.

Installations Off

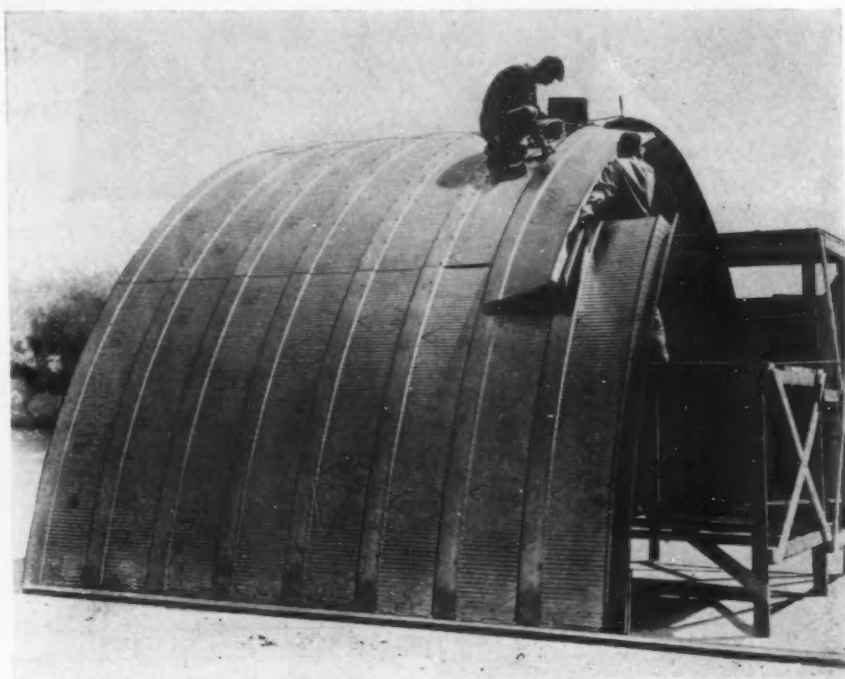
Though factory installations of pumps generally have been off, part of the new spurt of inquiries is for industrial fire pumps and boiler feed pumps. Chemical and petrochemical buying, along with petro-

leum, slowed in July, but there is sufficient evidence to suggest that August represents a mild rebound in these product lines.

Using More Stainless

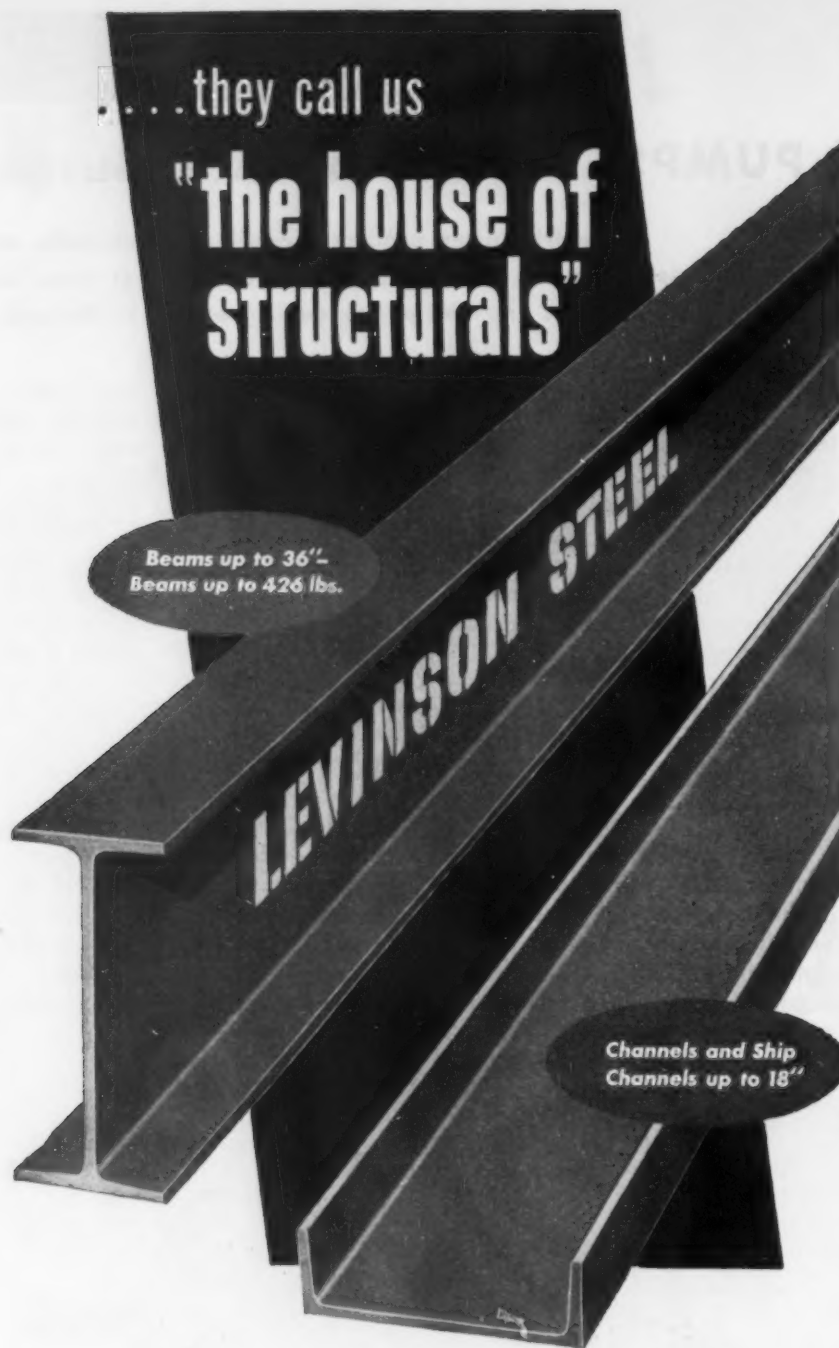
That, pump men feel, is the short run outlook. In the long run, their customers' demands suggest an expanding use of more corrosive and more abrasive materials, at higher temperatures and with higher vacuum requirements. While there's no doubt that standard pumps are and will continue to be the bread and butter of the industry, the volume of special pumps is increasing, inventories of off-the-shelf items seem to be decreasing at least mildly, and cost per individual pump is rising.

For instance, stainless steel ship-



INLAND STEEL has entered the light steel building field with its Lok-Rib buildings which can be assembled by three unskilled workers in 80 hours. Buildings are expected to find widest application as storage facilities.

(For story turn page)



We constantly get calls for extra large sizes in beams or channels . . . structurals that mills roll only two or three times a year can usually be found in Levinson stocks. Chances are we can take care of your inquiries, too. Since we always carry standard sizes in beams, angles, channels, plates, rounds, etc., you can buy to advantage in the larger weight brackets.

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STEEL WAREHOUSE SERVICE

MARKETING

ments to the pump industry are rising. Chrome and nickel irons, 400 series stainless, plastic and rubber liners are moving up. Special pumps at 7000 to 8000 rpm are already in industrial use. Speeds of 10,000 to 12,000 rpm are in the offing, and 24,000-rpm speeds are believed not only feasible but approaching.

Porcelain enamel liners, stronger 2 years ago, are slowing, will probably continue to do so. High pressure demands on pump builders are boosting their consumption of Meehanite and "close grained" irons, with more heat treating.

Industrial pump sales generally increase seasonably in the fall. At least a moderate percentage of pump men are already reporting a pickup in inquiries that suggest a better second half.

Prefabs:

Inland enters light steel building field.

From Milwaukee last week came the announcement that Inland Steel Products Co., Inland Steel subsidiary, would move into the light steel building market with a new product, would shoot for a \$10 million selling goal yearly over the next 5 years.

In a business that currently is rated at \$105 to \$107 million in sales annually, and is believed capable of pushing to \$500 million annually within 10 years, the Inland Steel Products entry was impressive. A demonstration unit that would resist a 100-mile-per-hour gale was erected, without structural members other than the ribbing formed into the 2x8-ft 18-gage galvanized sheet parts, by three unskilled assemblers in 80 manhours.

The building can be stretched to nearly any length in 2 ft increments, is capable of erection in any of four standard widths, 24 ft, 32 ft, 40 ft and 48 ft. Secret of the light-weight-with-strength is a deep V-type rib formed along the edge of each curved and corrugated panel. Entire building is locked together with standard bolts—wrench, drift pin, and pliers are the only tools needed.

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♦ **PRODUCTION** of hard-to-get titanium is slated to get a sharp boost shortly.

The government and Western Pyromet Corp. have closed a deal giving the Nevada firm the right to use Uncle Sam's \$6 million idle magnesium plant near Manteca, Calif.

The plant, operated by Kaiser Magnesium Co. from 1942 to 1944 and again for several years after 1951, "has a potential titanium sponge metal capacity of 6000 tons annually," according to B. D. Hardin, president of Western Pyromet.

No Government Money

Mr. Hardin explained that his company will use only about half of the vast plant in the next few months "during the early experimental phases of operation." But Western Pyromet's contract with General Services Administration guarantees the company an option to take over the entire plant if needed. The lease runs for 10 years, Mr. Hardin said.

The deal with the government, which has been cooking for about a year, does not involve any government financing, according to Mr. Hardin. "We probably will finance ourselves." The money problems for the first phase—the demonstration period during which the type and amount of equipment needed will be determined—have been solved, he said. That's something under \$300,000, he estimated.

Start Small

Mr. Hardin estimates the shake-down period—the time until wrinkles are ironed out and production gets underway—will take from 6 to 9 months. His company will use the modified Kroll process.

"After that, we have a large construction program planned. We are going to work as fast as we can to arrive at maximum production rate of 6000 tons annually." This, he thinks, will be in about 18 months.

Company Is Confident

Mr. Hardin emphasized that Western Pyromet will employ very few people for the first 6 months. "It will be mostly scientists and engineers who will carry on dem-

onstrations. We are in a hurry to finish this phase of our work."

Eventually, he estimates, the plant will employ about 1000 people. This will be good news to the Manteca area which has been suffering a serious unemployment problem.

Western Pyromet, a recently formed Nevada corporation, is headquartered in Reno now, Mr. Hardin said. Although he was reluctant to disclose its capitalization, he admitted "it is not high now."

Face Problems

The company has quite a staff of businessmen, scientists and engineers, according to Mr. Hardin—himself a chemical engineer. "We just completed building a \$20 million magnesium plant in Norway. We are perfectly aware of all the problems we face in producing titanium in the Manteca plant. But we have an excellent background."

Mr. Hardin, who just returned from Washington, D. C., with the deal all sewed up, feels the government's idle Manteca plant is well located for the purpose. In addition to being in the middle of a prolific labor supply, it is well-situated for good transportation—water, highway and rail. "We are only a few miles from the Port of Stockton."

Small Starting Staff

When Kaiser shut down the Manteca plant last June, the facility employed about 550 people. Mr. Hardin, who wouldn't peg a definite date when he was going to start the dust flying with his pilot operation, figures he won't need more than 30 scientists and engineers at first.

He declined to reveal additional

details on his agreement with the government, pending an official announcement from GSA fully outlining Pyromet's contract.

New Titanium Process

Newest entry in the race for a cheaper way to produce titanium metal may be the Glidden Co. of Cleveland. Last week Adrian Joyce, board chairman, said his firm has hit on an electrolytic process "which looks very interesting." Mr. Joyce would not elaborate but indicated Glidden is considering erecting two plants at Sparrows Point for production of titanium metal and titanium dioxide. Combined cost would be about \$12 million with no government aid contemplated.

If pilot plant is successful an additional \$8 million would be spent on new plants by 1956 and eventually \$30 million in production facilities, Mr. Joyce indicated. Titanium slag from the Quebec Iron and Titanium Corp. and ilmenite would be used in the plant.

Although start of construction was scheduled by Mr. Joyce for Sept. 1 in the interview, later information indicated it would be delayed.

Open Gulf Ore Dock

Operation of the new Mobile (Ala.), Ore Terminal of Tennessee Coal & Iron Div., U. S. Steel Corp., commenced last week with the unloading of the *SS Ore-Chief*, first of the vessels to convey ore from Puerto Ordaz, Venezuela, to the TCI ore terminal.

The *Ore Chief* docked a cargo of 21,000 gross tons of Venezuelan ore from U. S. Steel's Cerro Bolivar operations.

TITANIUM: Add Western Plant

Western Pyromet signs deal with GSA to operate Manteca, Calif., magnesium plant as titanium facility . . . Plan 6000 tons annual sponge output . . . Finance privately.

Handling:

"Supermarket" cuts parts distribution costs.

A self-service parts "supermarket" is expected to pay off with a \$250,000 saving in its first year of operation in a jet aircraft plant. Lockheed Aircraft Corp. has installed some 1000 bins and racks in the B-47 assembly area of its Marietta, Ga., plant for issuing about 25,000 different parts to production workers.

Savings include a 25 pct reduction in floor service and stock control personnel and 60,000 sq ft less floor space as well as elimination of considerable paper work and reduction of inspection time.

Usual multiple handling in conventional stock control systems is bypassed by sending parts "direct from factory to consumer." They are routed directly from point of manufacture to the "supermarket" located right where parts are finally installed in the aircraft.

Weekly "shortage forecasts" on each bin serve as inventory records and help eliminate cumber-

some card file control systems.

Department manager C. J. Stanger had the original idea in 1945, has been perfecting it ever since. Pilot experiments began a year ago.

Lockheed likes the system so well it's being extended to other departments.

OK Emergency Powers

Defense Dept. will retain its emergency powers to expand and maintain defense production capacity to meet mobilization requirements for another year.

President Eisenhower signed a bill which gives defense officials blanket authority to expand production. The bill, an extension of powers originally granted in World War II, eliminates the need for the military to obtain congressional authority for each specific expansion of industrial capacity.

Will Add to Stockpile

Congress has gone along with a White House request for \$380 million to finance a long-term stockpile of critical and strategic materials in an appropriation included in its \$1.6 billion supplemental money bill.

President Eisenhower asked for the funds to purchase quantities

of defense materials expected to become available soon at low prices. The long-term program calls for stockpiling of materials in addition to current buying goals.

Also included in the supplemental bill is \$82.6 million for ship construction; \$30 million for tanker construction; \$22 million for airport construction, and \$21 million for hospital construction.

Tax Benefit Deadline

Deadline for starting construction on 9 types of transportation equipment and facilities for which special tax benefits have been granted is extended 6 months by the Office of Defense Mobilization.

In another action, ODM also revised its goal for expanding the nation's warehouse and storage facilities in areas which have storage shortages.

Transportation equipment included in the new directive are freight cars, diesel locomotives, inland waterway vessels, Great Lakes ore carriers, railroad terminal and road facilities, port facilities and airport facilities.

ODM will permit these industries to write off against their federal tax liabilities the cost of construction of the items in 5 years. It will also grant tax benefits for construction of storage facilities, for government-owned stockpiles, machinery, general dry merchandise and cotton.

Contracts Reported

Including description, quantity, dollar values, contractor and address.

Flashlight: tubular type, 46000 ea, \$119, 149, Stewart R. Browne Mfg. Co., Inc., N. Y.
Reel and cable assemblies, 4365, \$1, 451,852, The Okonite Co., Passaic, N. J.
Box, ammunition, cal. .30 M19A1, 500,000, \$580,000, United Metal Box Co., Brooklyn, N. Y.
Shell, HE1, 30MM, 632500, \$335,667, G. M. Co. Mfg., Inc., Long Island City.
Case, cartridge, for 57 MM rifle, 400,000, \$784,000, Polaron Products, Inc., New Rochelle, N. Y.
Mine AT heavy, practice M12 with wooden crate, 130000, \$777,400, Globe Lighting Prod., Brooklyn, N. Y.
Tank, 90MM T-48, 4352, \$3,739,321, GMC Fisher Body Div., Detroit, Michigan.
Howard Earl.
Transmission and governor assy, Var. \$1,301,698, Sundstrand Machine Tool Co., Rockford, Ill.
Signal generator, 90 ea, \$104,573, Federal Mfg. and Eng. Corp., Brooklyn, N. Y.
Spare parts for H23 helicopter, Var. \$1, 249,770, Hiller Helicopters, Palo Alto, Calif. E. A. Grindle.
Radar set AN/ALT-8, 24 ea, \$274,765, Raytheon Mfg. Co., Waltham, Mass. W. H. Thompson.
Target drones, sp pts, \$3,266,190, Ryan Aeronautical Co., San Diego, Calif. M. K. Smith.



SUPERMARKET handling of jet aircraft parts at Lockheed is expected to result in saving of \$250,000 in first year of operation.

Report To Management

Democratic party leaders are seriously worried as polltime nears. Trouble is they're finding it difficult to drum up campaign issues.

They had been expecting that a full blooming recession in the fall would give them control of Congress. But now even some of the most audible wolf criers privately admit the business pickup has caused "recession" to lose its luster as a campaign issue.

You can still figure the Democrats will make the most out of whatever's left of the recession. They'll play up unemployment, the shorter workweek, drop in production; will focus attention on distress areas. And you know the labor unions will be scalp hunting right along with them.

Fact remains, however, that not enough people were hurt by the business decline to make "Ike's recession" a convincing campaign issue.

Other issues you can expect the Democrats to bring up:

- (1) McCarthyism and the McCarthy-Army mess.
- (2) Cutbacks in defense spending have weakened our efforts to halt Red aggression.
- (3) Pop-fly dropping in Indochina and at Geneva.
- (4) Administration's tax policy has been a big business handout; didn't give enough aid to the average taxpayer, nor enough help to small business. Cut in taxes on corporate dividends will be labeled a stockholders' boondoggle.
- (5) Reduction in farm parities is a cruel cut for the already hard-pressed farmer.
- (6) Taft-Hartley is still in effect in its old invidious form.
- (7) Atomic energy legislation, handling of TVA are attempts to help big business at the expense of the taxpayer.
- (8) Attacks on Ike's GM-model Cabinet staff.

You can figure none of these issues is sufficiently compelling to put the Democrats in control so long as most of the people have been satisfied most of the time which appears to be the case at present.

Republicans on the other hand will be able to go to the people with some fairly potent arguments on why they should be returned to control of Congress:

Representatives running on a vote-for-me is a vote-for-Ike platform will:

- (1) Say (rightly or wrongly) that Ike ended the Korean War, kept us out of Indochina.
- (2) Can point to the fact that while the Republicans were in power we made the switch from a wartime to a peacetime economy without going into a really serious economic decline.
- (3) They will claim credit for passage of tax cuts amounting to more than \$7 billion for private citizens and business.
- (4) Point to a record of reduced government spending and a more nearly balanced budget than we've had in several years.
- (5) Broadened scope of social security benefits, passed housing and highway bills.
- (6) May dig up the Harry Dexter White case or release new information relating to Communists in government while the Democrats were in control.

And finally you have to rate the 83rd Congress as an extremely productive one. There were several highly publicized delays such as the debate over the Bricker amendment, the McCarthy-Army hearings and a few moments of madness such as the recent stampede to outlaw the Communist Party. These events at times made it seem that little was accomplished.

This, of course, is not the case. Some very vital legislation was passed in the last session of Congress—legislation of the caliber that will make a permanent imprint in the history books.

In this category are: passage of the St. Lawrence Seaway bill; legislation to promote industrial development of atomic energy; the gigantic task of revising the tax code; extension of social security benefits. And since it happened while the Republicans were in control, they can take indirect credit for the Supreme Court decision banning segregation in the schools.

INDUSTRIAL BRIEFS

Name Changed . . . Industrial Furnace Manufacturing Assn., Inc., Washington, D. C., has changed its name to Industrial Heating Equipment Assn., Inc.

Accepted . . . The A. M. Byers Co., Pittsburgh, has been accepted as a member of the Building Research Institute, Washington, D. C.

Appointed . . . Hydraulic Press Mfg. Co., Mount Gilead, Ohio, has appointed two new distributors for its complete line of H-P-M hydraulic machinery. New distributors are: Mine and Smelter Supply Co., Denver, Colo., and El Paso, Tex., and the Todd Machinery Co., Salt Lake City, Utah.

Celebrating . . . Curtis Mfg. Co., St. Louis, is celebrating its 100th anniversary.

Big Payoff . . . Westinghouse Electric Corp., Pittsburgh, paid its employees more than \$110,000 during the first half of this year for ideas on how to improve the company's operations.

Joined . . . T. W. Allsworth and L. D. Striebel have joined in representing Gas Machinery Co., of Cleveland, Ohio. Mr. Allsworth and Mr. Striebel have formed the Allsworth-Striebel Corp., 53 West Jackson Blvd., Chicago, for exclusive industrial furnace representation in Illinois, Indiana, and Wisconsin.

Relocated . . . Lord Mfg. Co., Erie, Pa., announced the relocation of its New York regional field engineering office, to 630 Fifth Avenue, Rockefeller Center, New York 20, N. Y.



C. R. HELLER, executive secretary-treasurer, Foundry Equipment Manufacturers Assn., who heads the association's new offices at 1 Thomas Circle, Washington.

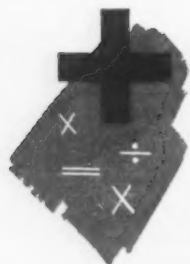
Constructed . . . Temco Aircraft Corp., Dallas, Tex., constructed an entire building around a giant 5000-ton aircraft press recently. The press was designed and built by Hydraulic Press Mfg. Co., Mount Gilead, Ohio.

Half Built . . . American Can Co.'s Research & Development Center, scheduled to take its place as a new Barrington, Ill., landmark early next year, has reached the half-way point in its construction schedule.


Named . . . J. H. France Refractories Co. has been named north-eastern U. S. and Canadian licensee for the manufacture of the Walters Loktite Checker system for iron and steel industry checkerwork application.

New Program . . . International Correspondence Schools, Scranton, Pa., will award 64 complete college scholarships valued at more than \$15,000.

Opening . . . Seaporcel Metals, Inc., New York, manufacturer of architectural porcelain enamel, announced the opening of a new district office at 1616 Walnut St., Philadelphia.



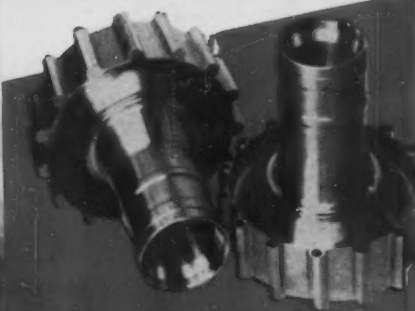
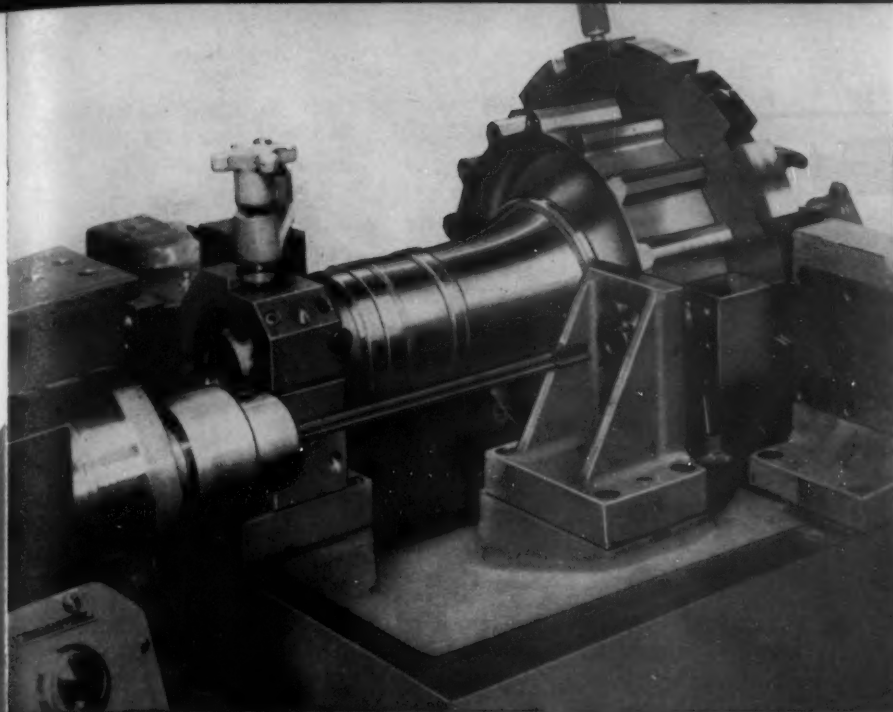
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this  is the sign of
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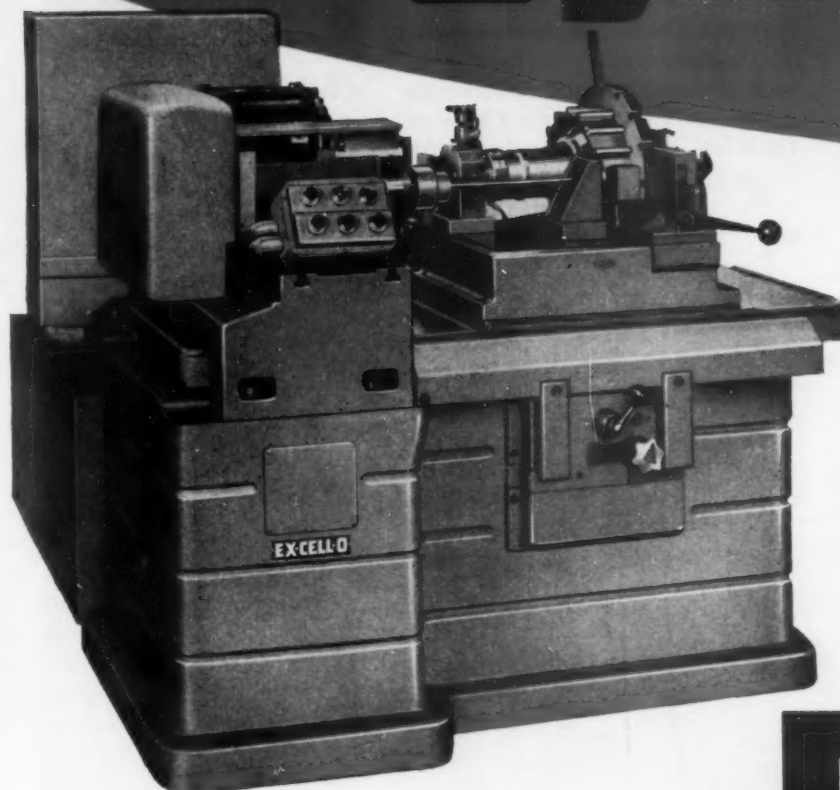


S.A.E. 4340 aircraft part before and after 15 Bor-Dril holes. Hole size and location are held within plus or minus .001".

The workpiece is clamped in an arbor having an index plate. Note the gun drill about to enter the guide bushing. Holes are $\frac{1}{8}$ " diameter, $3\frac{3}{8}$ " long.

EX-CELL-O
ANNOUNCES

BOR-DRIL



**THE
MODERN
APPROACH
WITH
GUN-TYPE
DRILLS**

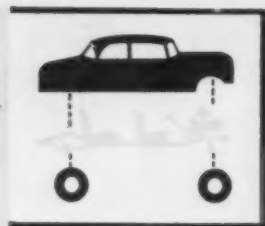
Ex-Cell-O Precision Machines are ideal for Bor-Dril machining of close-limit holes from the solid because of their smooth, easily-adjusted feeds and vibration-free construction.



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MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING SPINDLES • CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

AUTOMOTIVE ASSEMBLY LINE



Chrysler Bets on Style in Sales Race

Firm counts on complete restyle of '55 lines to woo back lost buyers . . . New looks will be longer, lower . . . Style boss Exner has banished boxy appearance . . . Finish '54 production—By R. D. Raddant.

♦ THERE is a strong feeling of tension in Chrysler styling these days. There the crew of 200 designers and engineers who are responsible for the 1955 lines are waiting with mixed hope and apprehension for the introduction of the new models.

The industry knows that Chrysler has pinned its chances of getting back its former share of the market on its new cars. As a result, speculation on the new Plymouth, Dodge, DeSoto and Chrysler lines has reached a new level for Detroit. When the stakes in the game are that high, kibitzing is bound to be terrific.

Makes Complete Change . . . Although the final decision on styling rests with the extreme top management, Chrysler's director of styling, V. M. Exner, is the key man in the present situation. The 1955 cars will be the first complete model change since he has been director.

While the new models are kept under the tightest possible wrap

of secrecy, Mr. Exner himself has provided advance peeks under the blanket through his previous creative efforts in styling.

Some of his concepts that will be very much in evidence in the new lines can be seen in the half-dozen experimental cars turned out when he was chief of Chrysler's advance styling from 1949 until he was made director of styling in 1953.

Styled Revolutionary Studebaker . . . Looking back even farther, he was previously chief styling engineer at Studebaker. Those in the know say he was instrumental in developing the 1946 Studebaker, considered one of the greatest of automotive styling jobs.

Just what can be expected in the 1955 Chrysler lines?

Obviously they will be longer and lower in appearance, a conclusion that can be reached by any amateur critic.

This is a lot easier to say than to do. In contrast to common belief, dimensions of Chrysler lines

are surprisingly close to industry leaders in the long and low department.

For example, the Plymouth is actually the lowest of the Ford, Chevy, Plymouth trio. The Dodge has a longer rear overhang than the Buick and the Chrysler a longer front overhang than the Cadillac, to pick up some measurements at random. (In fact, a comparison of exact measurements shows many startling misconceptions of dimensions.

Look Lower, Longer . . . Therefore, the Exner treatment will be visible in the hood lines, making them extend to a longer, flatter appearance. This will be aided considerably by lengthening the wheelbase and overall length in the Dodge and Plymouth.

Top treatment will be entirely different with Chrysler's version of the wraparound windshield the main point. This will be a different approach than the GM feature and very similar in concept with DeSoto's experimental Adventurer II. Corner post maintains its angle, but is set much farther back on the body. The windshield curves around at a greater slant as almost a segment of a sphere. Other glass treatment tends to carry out this feeling. This is a typical Exner touch.

Lose Boxy Lines . . . No Chrysler car will have a bob-tailed or stubby effect. Rear fenders will be carried high and far. Trunks will be extended to avoid any cut-away appearance. Grilles of each



NEW LOOK for Chrysler Corp.'s 1955 cars may be forecast in the lines of De Soto Adventurer II, newest of styling director Exner's idea cars.

line will maintain some of their present characteristics, but new approaches will also be visible here. Rear bumpers will get special attention, particularly in the Chrysler line with the exhaust incorporated into bumpers.

Mechanical changes have been widely publicized, principally the new V-8 for the Plymouth and extending the V-8 to the full Chrysler line.

Not Sports Car Copies . . .

While Chrysler's experimental cars have Italian styling, it should be remembered that these are confined to the sports car field. There is little of the Italian school visible in the regular lines, although the "sculptured" effect is visible.

Chrysler is making every effort that the 1955 lines get all the breaks when they hit the market. Production of 54's has just about ceased, giving dealers more than ample time to unload all of this year's models and avoid a cleanup problem. This is intended to leave clear sailing for Mr. Exner's best efforts.

Wages:

Independent auto firms cut excessive rates.

The voluntary wage cuts and benefit trimming that Studebaker workers took early this month is part of a pattern of tightening contracts that can be expected in high labor cost operations in the auto industry.

Probably wage cuts will not be the rule as such, but efforts are being made to rewrite contracts to eliminate provisions that lead to excessive costs.

This occurred last week at American Motors where George W. Mason, president and chairman, suggested contract changes to union officials. The objective

was "revision and streamlining . . . to bring it up to date and to put American Motors in a better competitive position." He declared, however, that present wage levels would be maintained.

Trims Expenses

In recent months Packard has quietly been tightening up on its operations and one strike of short duration occurred. It is believed that this newly merged company was very successful in trimming excesses. Willys months ago took a wage cut.

It is no secret, certainly not to union membership, that the independents permitted their contracts to get out of line with the industry pattern. So far, bringing them back into line has met with unusual success and has shown a fine brand of labor relations.

Ford Acquires Plants

Two plants that were originally constructed for defense purposes figured in Ford plans last week.

At the plant in Livonia that was constructed and actually launched in operation as the Ford tank plant, automatic transmissions were being turned out.

AUTOMOTIVE NEWS

Meanwhile, it was learned that Ford had leased on a 3-year basis the \$50 million jet engine plant near Romulus, Mich. This plant was built by the Navy to be operated by the Lincoln-Mercury Div. for the manufacture of jet engines. The Livonia plant, however, is Ford-owned.

First transmissions turned out at Livonia are Merc-O-Matic units for Mercurys. A new transmission for Lincoln is expected to follow. This will replace the Hydra-Matic transmission that has been purchased from GM for use in Lincoln cars since 1950.

Bets on Belts

L. D. Crusoe, general manager of the Ford Div., sets a good example for cautious drivers. His personal Ford is equipped with a full set of seat belts. Not only does he use them religiously himself, but insists that anyone riding in the front seat also strap himself in.

THE BULL OF THE WOODS

By J. R. Williams



Automotive Production

(U. S. and Canada Combined)

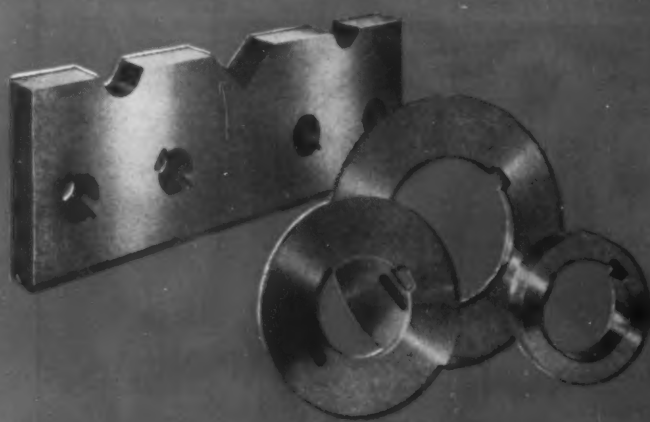
WEEK ENDING	CARS	TRUCKS
Aug. 21, 1954 . .	102,970*	18,624*
Aug. 14, 1954 . .	102,736	16,472
Aug. 22, 1953 . .	136,658	26,977
Aug. 15, 1953 . .	131,098	25,428

*Estimated. Source: Ward's Reports

*built for
rugged
action*



Heppenstall SHEAR KNIVES
durable blades for industry



Many leading plants make Heppenstall their standard specification for shear knives. Heppenstall's record for durability provides such production advantages as:

- MORE CUTS BETWEEN GRINDS
- MORE UNITS PER BLADE
- LOWER OVERALL BLADE COST
- INCREASES IN PRODUCTION

The reasons may be found in Heppenstall's high standards for the development and manufacture of shear knives. Made from high quality, electric induction steels, these long-lasting knives are famous wherever hot and cold, ferrous and non-ferrous metals are cut and sheared.

Make Heppenstall *your* standard specifications.



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The most dependable name in forgings

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Will Spend More on Far East Defense

Secret report on conditions in Far East has caused Secretary Wilson to increase arms spending . . . Defense step-up will aid business pickup . . . Jets may open up residential areas for industry—By G. H. Baker.

♦ **NEW STRAWS** in the wind indicating a coming pickup in the business pace:

(1) Military planners are drafting new and enlarged procurement orders for defense operations both at home and abroad;

(2) Inventories of civilian goods are melting away faster than at any time since 1952.

The Pentagon's plans for pulling out the throttle of spending a little more are no longer in the talking stage. They have reached the action stage, and outlays of funds to bolster defense lines in the Far East are already in the works.

Defense Secretary Charles Wilson says the U. S. "without question" will spend more on military aid for the Far East.

Danger to U. S. . . . The Wilson decision to step up arms spending for anti-Communist areas in the Orient springs chiefly from the report (still classified secret) submitted by Gen. James A. VanFleet and Assistant Defense Secretary W. J. McNeil, who recently completed a 10-week survey of Korea, Japan, Formosa, and the Philippines. Insiders say the report speaks grimly of the danger to the U. S. that would result from an all-Communist Asia.

U. S. aid, both in the form of military supplies and in military leadership, is urged.

Want Business Data . . . White House officials are increasingly aware that the state of business (payrolls, sales, profits) this autumn is going to bear directly upon the Republican party's chances for

success in the November elections.

One immediate result of this situation: The economic experts who keep the President briefed on national prosperity are calling for both greater volume and greater detail in the "business evaluation" reports sent to the White House by Federal agencies.

For example, more than a score of top industrial officials now on duty with the Dept. of Commerce are being asked to report on the first of each month:

How has your industry fared during the past 30 days?

How do you think it will do in the next 30 days?

What's your outlook for (1) production, (2) employment, (3) profits, and (4) inventories?

Jets in Living Room . . . Jet airplanes are beginning to alter residential and industrial real estate patterns around the country. As a result, some of today's fashionable

residential areas may be teeming production centers within a few years, provided they don't erect high barriers like smokestacks.

The reason: Jet planes, requiring a longer landing approach, are weakening home owners' property values.

The ever-present possibility of a crash, plus irritating noise emanating from jets, puts an automatic blight on residential areas near airports. Opens them up as possible industrial sites.

Need More Space . . . Channing C. Beeth, president, International Society of Residential Appraisers, points out that propeller-driven planes on scheduled runs use a 40-to-1 glide angle in approaching airports.

This means that prop-planes break the 1000-ft ceiling 7.5 miles from the airport, and pierce the 500-ft ceiling 3.5 miles out.

But jet airlines use a 50-to-1 approach angle. This puts them below the 1000-ft ceiling 10 miles out, and below the 500-ft level fully 5 miles from the airport.

St. Lawrence Agreement . . . Formal agreement to build the \$263 million St. Lawrence seaway has been reached by the governments of the U. S. and Canada.

An exchange of notes between the two nations completed the legal basis for the project.

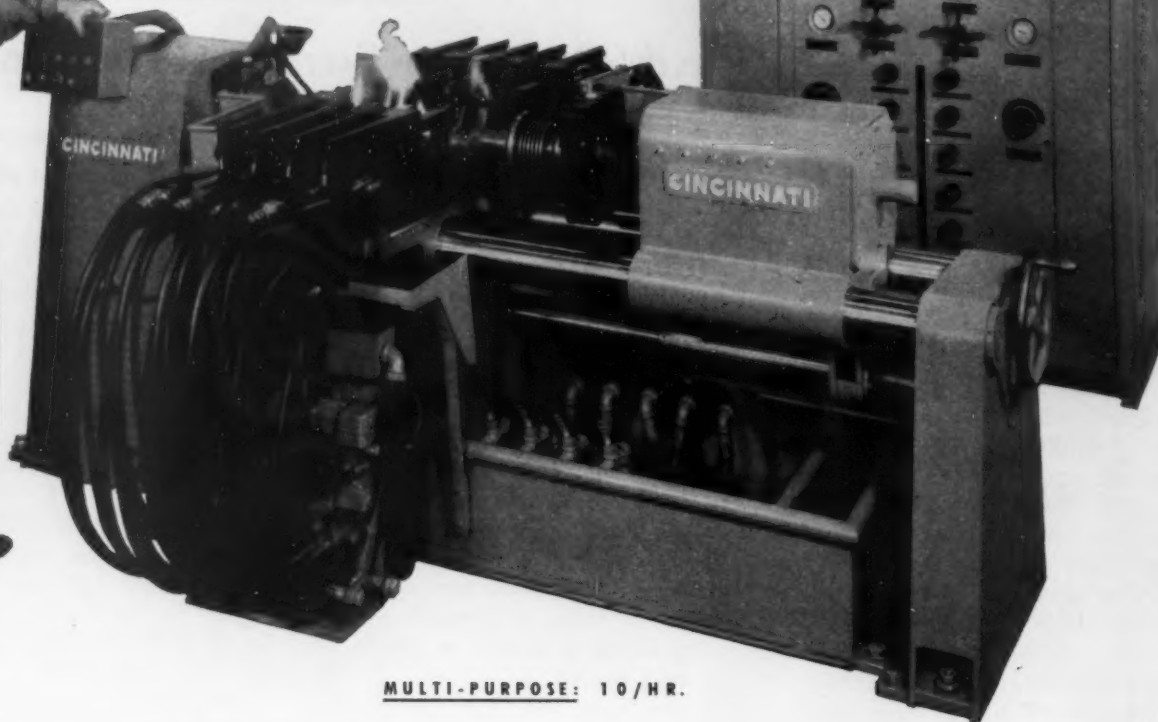
Says the State Dept.: "The way is now clear for action on both sides of the boundary in the construction of deep water navigation facilities from Lake Erie to Montreal. It is expected that construction will be completed in 1958."



"Whenever he runs for election he dresses like he needs a job."

What's new?

NO. 28 OF A SERIES.



MULTI-PURPOSE: 10/HR.

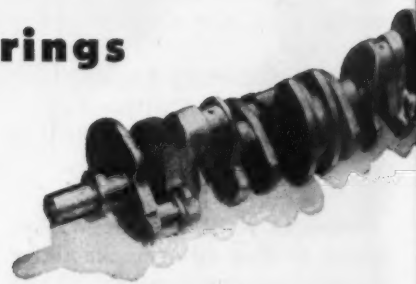
flamatic hardens crankshaft bearings

10/hr. to 70/hr.

It's no wonder that the automotive industry turns to **flamatics** for selective heating precision. One of the many reasons is the automatic **flamatic** which hardens all 9 main and pin bearing diameters of a crankshaft in one operation. Designed for one size and type of workpiece, this machine averages 70 units/hr. Another reason is the **flamatic** shown above, which provides the flexibility required for small lot production runs or development work on a variety of crankshafts. Interchangeable flame heads, adjustable flame head holders, and adjustable tailstock make it easy to change from one size of crankshaft to another.

Average production: 10 units/hr.

Single- or multi-purpose **flamatics** have met production requirements on many other parts—gears, spindles, cams, pliers, etc. More reasons for specifying **flamatic** are described in new Flamatic Catalog, Publication No. M-1861.



SINGLE-PURPOSE: 70/HR.



flamatic

PROCESS MACHINERY DIVISION

THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO, U.S.A.

Communists:

Controversial anti-Red bill would help industry.

The controversial anti-Communist bill, whipped through Congress in a flurry of political sharpshooting, will give industry aid in knocking Reds out of its plants and from the unions it has to deal with.

After the smoke cleared and bill was passed for the third time by the Senate and the second time by the House, President Eisenhower was asked to approve a measure which in effect would outlaw the Communist Party and contains two levers for muscling Reds out of industry. Early this week there was still a possibility the President might veto even the revised version of the anti-Communist bill.

In final version, the measure discarded a Democratic proposal to fine or jail party members, but found the Communist Party a menace and proposes to strip citizenship from its leaders and their collaborators.

Deny Bargaining Rights

Among the ramifications of the bill is that persons found to be Communists would not be able to work in defense plants, make contracts protected by law, bank money, hold Federal posts or run for elective office. Most important is the first prohibition against working in defense plants, which under a new provision of the sabotage law, now includes many defense-supporting civilian industries, including utilities.

Another provision of the bill would deny bargaining rights to Communist-dominated unions. This would pave the way for a "clean" union to win certification as the bargaining agent and replace Red-tinted unions.

Bill Still Controversial

Persons found to be Communists already were required to register with the Justice Dept., and those failing to do so are subject, upon conviction, to a \$10,000 fine, up to 10 years in prison, or both.

This requirement, although 4 years old, is still being tested in the courts.

The new bill, watered-down from earlier proposals to meet Administration objections, is still controversial. Several leading jurists are giving weight to the announced Red contention that all, or part, of the new bill is unconstitutional. There is little doubt that the measure will not become effective until reviewed by U. S. Supreme Court.

Channel:

Approve \$92 million for Delaware channel dredging.

A booming industrial development along the Delaware River Valley from Philadelphia to Trenton is predicted following congressional approval of the \$92 million program to dredge and widen the river channel.

The authorization, omitted from the original House bill, passed by the Senate, and later approved by the House, does not insure that the project will be started soon, or ever, because the bill does not provide any money for the program. Backers plan to introduce a money bill at the January session of Congress, and predict favorable action.

Approval represents clearance of a major hurdle for the long-

WASHINGTON NEWS

awaited project, especially because the Senate defeated 56 to 21 a move by Sen. John F. Kennedy, D., Mass., to require local industry to contribute \$18 million for the dredging work.

The project calls for dredging the river to 40 feet from Philadelphia to the site of the U. S. Steel Fairless Works, to permit ocean-going ships to navigate, and 35 feet from there to Trenton. The government would put up \$91.4 million and local interests about \$1 million to provide a turn around at the Fairless Works and rights-of-way.

Boon to Upper River Area

During debate on Sen. Kennedy's motion, Sen. James H. Duff, R., Pa., revealed that the National Steel Co. has an option on 2500 acres of land opposite the Fairless Works on the New Jersey side of the river. This land, he said, will be the site of another major plant.

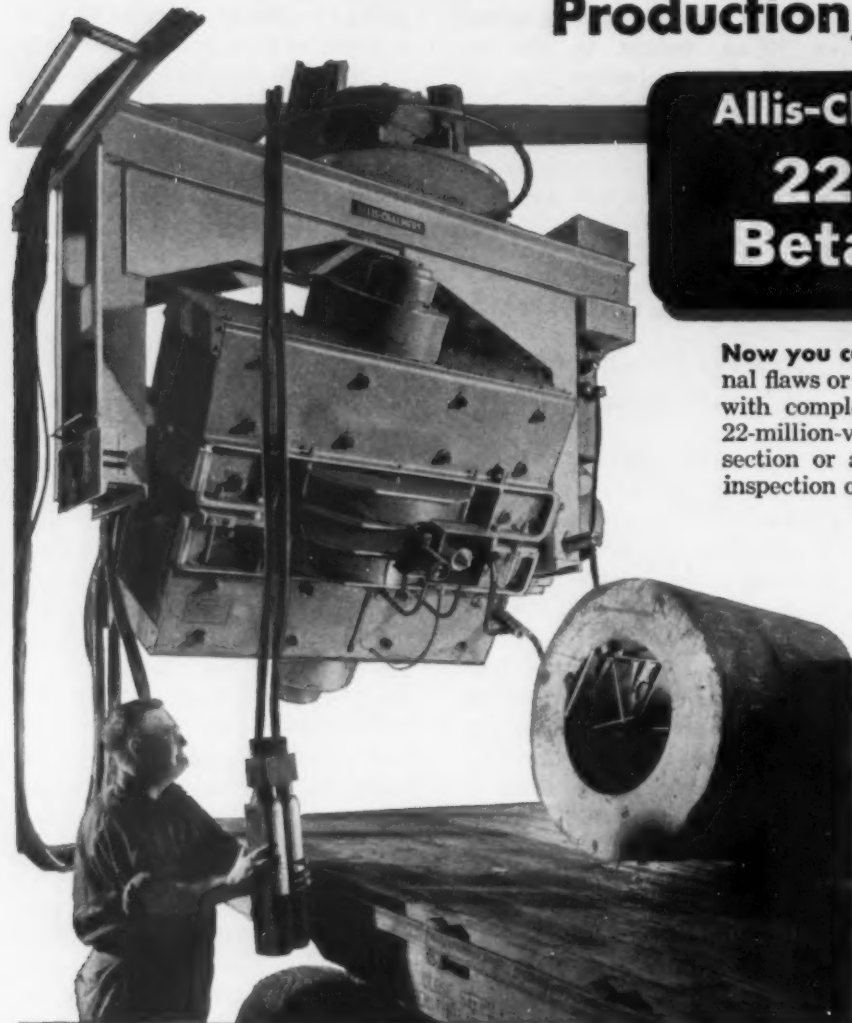
Mr. Duff contends that once the upper part of the river becomes navigable, its industrial development will equal that of the lower river valley between Philadelphia and the Delaware Bay, which contains some 8000 manufacturing plants. Mr. Kennedy argued that the project would benefit only the U. S. Steel Corp.



HEADS of St. Lawrence Seaway Development Corp. go over seaway construction plans. Front (l to r): M. W. Offtershagen, deputy administrator; L. G. Castle, administrator; H. Moore, member of advisory board. Back: J. C. Bfukema, K. M. Lloyd, E. J. Noble, members of advisory board.

New Inspection Tool

Betatron Brings Radical Savings In Design, Production, Material



Allis-Chalmers

22 Million Volt

Betatron

Now you can inspect castings or forgings for internal flaws or check alignment of hidden parts fast and with complete assurance. With an Allis-Chalmers 22-million-volt betatron you can examine either a section or a whole machine. In addition to rapid inspection of unusually thick parts, betatrons permit

inspection of smaller pieces with varying thicknesses in a single setup.

In steel sections from 1 to 20 inches thick, an Allis-Chalmers 22-million-volt betatron lets you see very small internal flaws. For example, a flaw only .040 of an inch in depth can be seen anywhere in a steel section 8 inches thick. Cracks only .002 of an inch wide are readily detectable.

It will pay to investigate the possibilities of a betatron in your plant. You can get complete information on its application, space requirements and how your present personnel can handle the unit. Contact the Allis-Chalmers office nearest you or write Allis-Chalmers, Milwaukee 1, Wis.

A-4325

Some of the Problems a Betatron Can Solve

Is your product cost too high?

You can cut costs by eliminating overdesign. Example: design factors reduced by the introduction of betatron inspection in one plant permitted design changes that resulted in a product less costly to manufacture and far easier to install because weight reductions simplified foundations.

Rejects running up shop costs?

When you find flaws before processing you save man-hours and machine time that would otherwise be wasted. Example: machine time frequently costs more than the entire amount of raw material used in a part — betatron savings pay off original cost fast. In addition, locating exact place and extent of flaws frequently means a casting can be repaired instead of discarded.

Are raw material costs cutting into profit margins?

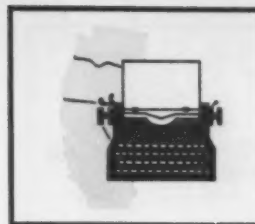
In another instance, the betatron's cost was saved in less than six months through raw material savings alone. Example: a complicated casting was replaced by a simple two-piece welded part because the speed and depth of penetration of the betatron permitted thorough inspection of the weld.

Are guarantees costing money?

When betatron inspection assures that every component is radiographically sound, many of the breakdowns that take up servicemen's time and require expensive replacement will be eliminated.

ALLIS-CHALMERS





WEST COAST REPORT

Predict Expanding Aluminum Markets

Top executive sees increasing use of the light metal in transport construction, canning and electric industries . . . Construction expenditures are lagging behind 1953 in 11 western states—By R. R. Kay.

♦ **ALUMINUM** will find expanding markets in construction, transportation, canning, and electrical industries. That's the prediction of Nathanael V. Davis, president, Aluminium Ltd., parent of Aluminium Co. of Canada.

Today, the construction industry is using aluminum exterior panelling on some 70 large buildings going up in the U. S. One of them, 22 stories, recently made news (see *THE IRON AGE*, July 1, 1954, p. 75).

See Growing Use . . . Automobile, truck, and railroad equipment industries will use increasing amounts of the metal, Mr. Davis said in an exclusive interview with *THE IRON AGE* on a recent visit to the West Coast. Aluminum has a future also in basic circular shapes where corrosion, conductivity, and vibration are factors.

Kaiser Aluminum & Chemical Corp. is right now attempting to evaluate potential uses of aluminum as part of the answer to lower costs in school construction. Possible use of the metal for interior panelling, doors, lighting fixtures, flashings, movable partitions, chalk trays and other school-use items is being studied. Daniel, Mann, Johnson & Mendenhall, Los Angeles architects and engineers, are conducting the nationwide survey for Kaiser.

Construction Lags . . . Heavy construction expenditures in the 11 Western states this year are lagging behind 1953, but are well ahead of 1952. Contract awards so far amount to \$1.7 billion, com-

pared with \$2.3 billion for the same period 1953, and \$1.2 billion for 1952, Daily Construction Service reports.

Street and road work are ahead of last year: \$258 million vs. \$246 million. Bridge construction is sharply behind: \$38 million vs. \$81 million. Railroad construction, dam building, and power development projects are other sharp laggards.

However, buying of machinery and supplies, including earth movers, rollers, and other heavy building equipment increased: \$119 million to date 1954 vs. \$110 million same period 1953.

Build Air Bases . . . \$40-50 million U. S. Army Corps of Engineers construction program, primarily for expansion of Air Force bases in southern California, Nevada, and Arizona, is ready for bids by private firms. About one-third is allocated to Edwards Air Force Base, Muroc, Calif., jet plane and missile testing center.

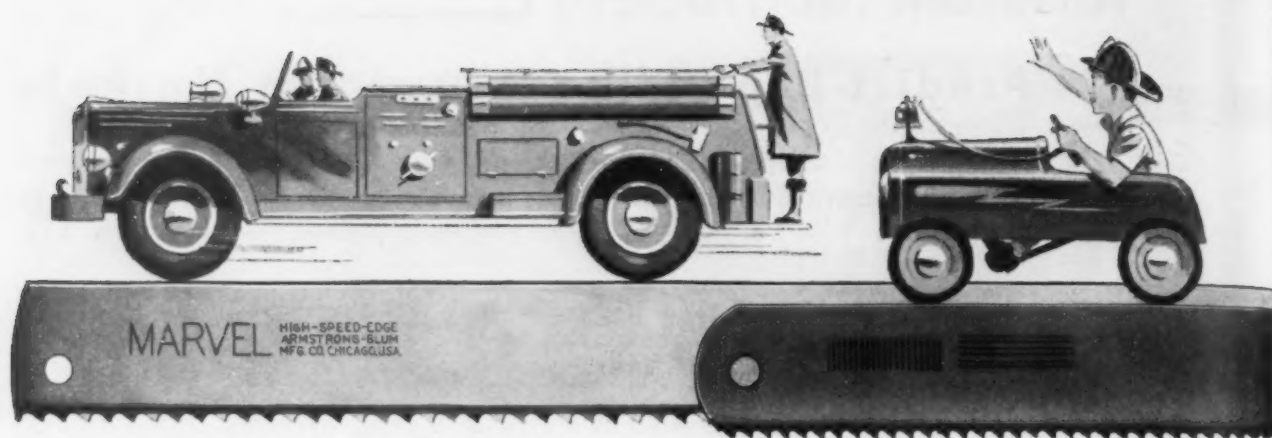
Several million dollars worth of aluminum alloy and stainless steel wing tip fuel pods, ordered by Northrop Aircraft, Inc., for its Scorpions, will extend production of this equipment for 24 months at Day & Night Div., Affiliated Gas Equipment, Inc., Monrovia, Calif.

Over one million dollars in specially designed steel shipping and storage containers for the Nike guided missile are to be made by Rheem Mfg. Co.

Industries Plan Expansion . . . Enterprise Div., General Metals Corp., San Francisco, plans to build diesel power units up to 5000 hp. Its largest ratings to date were 2700 hp . . . Southern Pacific Co. plans to build 1500 railroad box cars at its Sacramento, Calif., shops . . . Yuba Mfg. Co., Benicia, Calif., will build hydraulic dredges for harbor and channel work, re-entering the field for first time since 1915 . . . General Fusing Co., Oakland, Calif., is constructing a \$200,000 metal plating plant . . . North American Aviation, Inc., Los Angeles, is planning a 150,000 sq ft administration building, to cost \$1.5 million, at El Segundo, Calif. . . . Foxboro Co., San Leandro, Calif., is putting up \$150,000 building for design and manufacture of industrial instruments . . . Bacon Vulcanizer Mfg. Co., Emeryville, Calif., expanding with \$50,000 building for heat treating aluminum and steel . . . Bonzer-Western Corp. created by merger of two automotive accessories manufacturers, Bonzer Mfg. Co., Inc., Long Beach, Calif., and Western Products Co., Inc., Los Angeles.



"Must you have a totem pole?"



...but

Experience Cannot be Copied

More than a quarter-century ago MARVEL invented and basically patented the MARVEL High-Speed-Edge Hack Saw Blade—the UNBREAKABLE blade that increased hack sawing efficiency many-fold.

Every MARVEL Hack Saw Blade ever sold has been of that basic welded high-speed-edge construction, with constant improvements from year to year, as EXPERIENCE augmented the "know-how" . . .

MARVEL is not "tied" to any single source of steel supply, and has always used the best high speed steels that became available from time to time as metallurgy progressed. When-as-and-if finer steels are developed—and are proven commercially practical for welded-edge hack saw blades—MARVEL will use them, regardless of cost or source . . .

There is only one genuine MARVEL High-Speed-Edge! All other "composite" or "welded-edge" hack saw blades are merely flattering attempts to imitate—without the "know-how" of MARVEL EXPERIENCE . . .

Insist upon *genuine* MARVEL High-Speed-Edge when buying hack saw blades—and be SAFE, for you can depend upon MARVEL. They have been "tested", "pre-tested", and "re-tested" by thousands of users for more than a quarter-century!



ARMSTRONG-BLUM MFG. CO. • 5700 Bloomingdale Ave. • Chicago 39, U. S. A.



Automation Needs Better Tool Life

Phenomenal cutting speeds mean little without it . . . Best output economy comes with moderate speeds, less downtime for tool changes . . . Tools to make small chips will extend automation—By E. J. Egan, Jr.

♦ "THE MOST impressive array of machine tools, supplementary handling equipment, and automation control instruments will always depend mainly upon proper cutting tool action to deliver expected performance." The words are those of Dr. A. O. Schmidt, research engineer for Kearney & Trecker Corp., Milwaukee. Occasion: The 1954 Westinghouse Machine Tool Electrification Forum.

The "glamor" touch in many plant tours and industrial films is a familiar one. It tends to emphasize massive, yet intricate and gleaming machinery, discharging shiny parts at terrific speeds.

But the real "works" is a vital three-way junction where the cutting tool, cutting fluid and workpiece meet. Uninterrupted, trouble-free operation at this point tells most of the production cost story.

Have Limited Appeal . . . Reports of phenomenal cutting speeds, often for a single test and usually for comparatively light cuts of short duration, have limited appeal for automated operations, according to Dr. Schmidt. Cutting speed is not the whole answer.

Important thing is to keep cutting tools working as fast and as long as is economically practical. Tool changing means expensive downtime.

Plotting the relationship between machining time and operating cost for a transfer type machine tool produces an interesting V-shaped curve (see cut). Cost figures increase going from bottom

to top of the graph's vertical axis; machining time increases going to the right on the horizontal axis.

A Lot of Downtime . . . Low point of the rather broad "V" occurs midway on the machining time scale and represents the minimum cost possible. The minimum machining time area to the left of the "V" is designated as a high cost range. In this graph area, high cutting speeds are assumed to be accompanied by more rapid tool wear, with frequent and expensive replacement downtime.

Bulk of the graph area to the right of the "V" is also considered a high cost range, but for the opposite reason. Here machining time is too slow; overall costs aren't distributed among enough finished workpieces.

Generally, the region within and

just outside the lower part of the "V" curve is the best efficiency-economy target. The machining time range it covers is neither too fast nor too slow. It indicates that for a given machining operation choice of a cutting tool material should strike a balance between maximum cutting speed potential and rate of wear.

Permit Higher Speeds . . . In addition to a sensible choice of cutting tool materials for automated machine tools, cutting fluids and structure of the work itself play an important part in the cost picture. Careful attention to these elements can effectively cut costs by allowing higher cutting speeds without increasing tool wear.

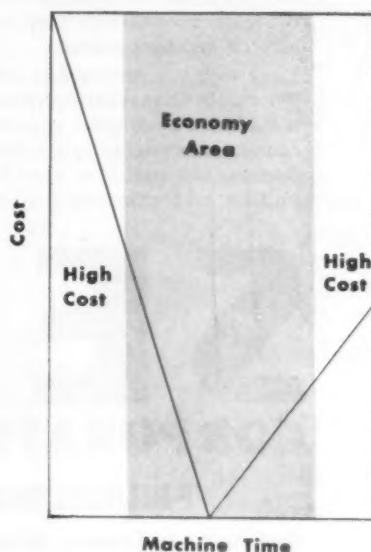
Discussing automation from another viewpoint, Dr. Schmidt said that the item of chip interference has limited the majority of these high production machining operations to cast iron workpieces.

Big problem in machining steel and other ductile materials is how to produce short chips. Solution of the problem through metallurgy or tool design will open a new field for automation, he stated.

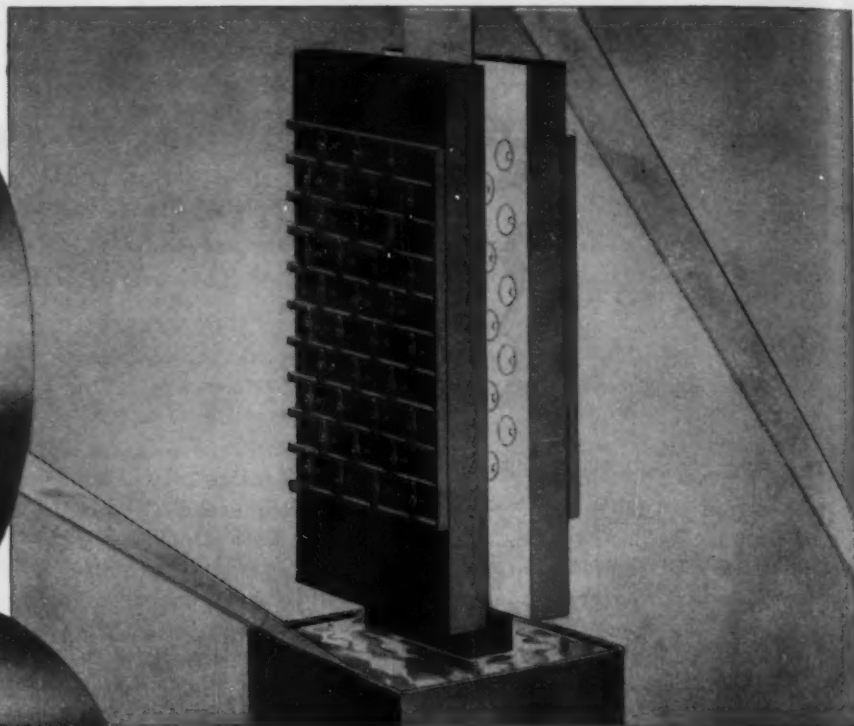
U. S. Enters Tool Show . . . Twenty-three U. S. machine tool builders will be represented in the total of 777 exhibitors at the fourth European Machine Tool Exposition in Milan, Italy, next month. The 9-day show will run from Sept. 14 to 23.

The Soviet Union's announced intention of exhibiting in a big way has fizzled out with a complete withdrawal from the show.

Cutting Speed Costs



FINEST EYELET METAL FROM FASTEST BRASS ANNEALER



Somers Brass Produces Maximum Ductility and Fine Grain with New Selas Furnace

A unique, fine-grain brass strip is produced at Somers Brass Company, Waterbury, Connecticut, in a Selas continuous strip-annealing furnace. Coil after coil of strip is absolutely uniform in quality. No externally prepared atmosphere is employed, yet strip comes out clean. The new Selas furnace uniformly anneals brass strip . . . gauge from .004" upward . . . at speeds up to 190 feet per minute. Operations formerly requiring hours now done in seconds with exceptional flexibility for emergency orders. Investment cost of work in process is reduced. Less floor space required for furnace operation.

The increased ductility and capacity for cold work improves deep drawing characteristics . . . complex eyelet shapes can be fabricated with clean-cut die impressions. The finer grain size allows easier buffing . . . a lustrous, scratch-resistant surface.

Look into the production and quality improvement possibilities of Selas Thermo-Automation equipment for your heat treating, brazing, forging, metal fusion and other operations. Whatever your problem in heat processing, Selas engineers can help you increase production, reduce costs and improve the quality of your finished product. Write today for descriptive bulletin on continuous strip annealing.

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CORPORATION OF AMERICA

PHILADELPHIA 34, PENNSYLVANIA

Heat Processing Engineers for Industry • Development • Design • Manufacture



The Iron Age

SALUTES

Bernard E. Alpern Bigger and better buildings for the community is his business; exercise of exceptional civic responsibility in order to make it a better place to live in is his pleasure.

Two jobs at once is not a temporary situation but a way of life for Bernie Alpern, president of Grand Iron Works, Inc., The Bronx, N. Y. For the past 20 years, Bernie, teamed with his brother, Jack, has guided the destinies of Grand, one of the East's largest steel fabricating firms, as well as playing a major and continuous role in civic matters.

Grand Iron Works has been a family affair since it was founded by Bernie's father, Emil Alpern, 50 years ago. Personnel at the outset included Mr. Alpern and three employees.

Bernie is credited for much of the firm's growth to the present, when over 130 employees aid in fabricating 20,000 tons of steel annually.

Greatest satisfaction to Bernie Alpern, however, is in serving the community that his firm helps build. His list of accomplishments would stagger most civic volunteers; Bernie just grins, comes back for more.

His recent appointment as a member of the Advisory Planning Board of the Bronx was an-

other logical step in his career of public service which began back in 1939 when he volunteered to serve on a local draft board. (He's still on it today.)

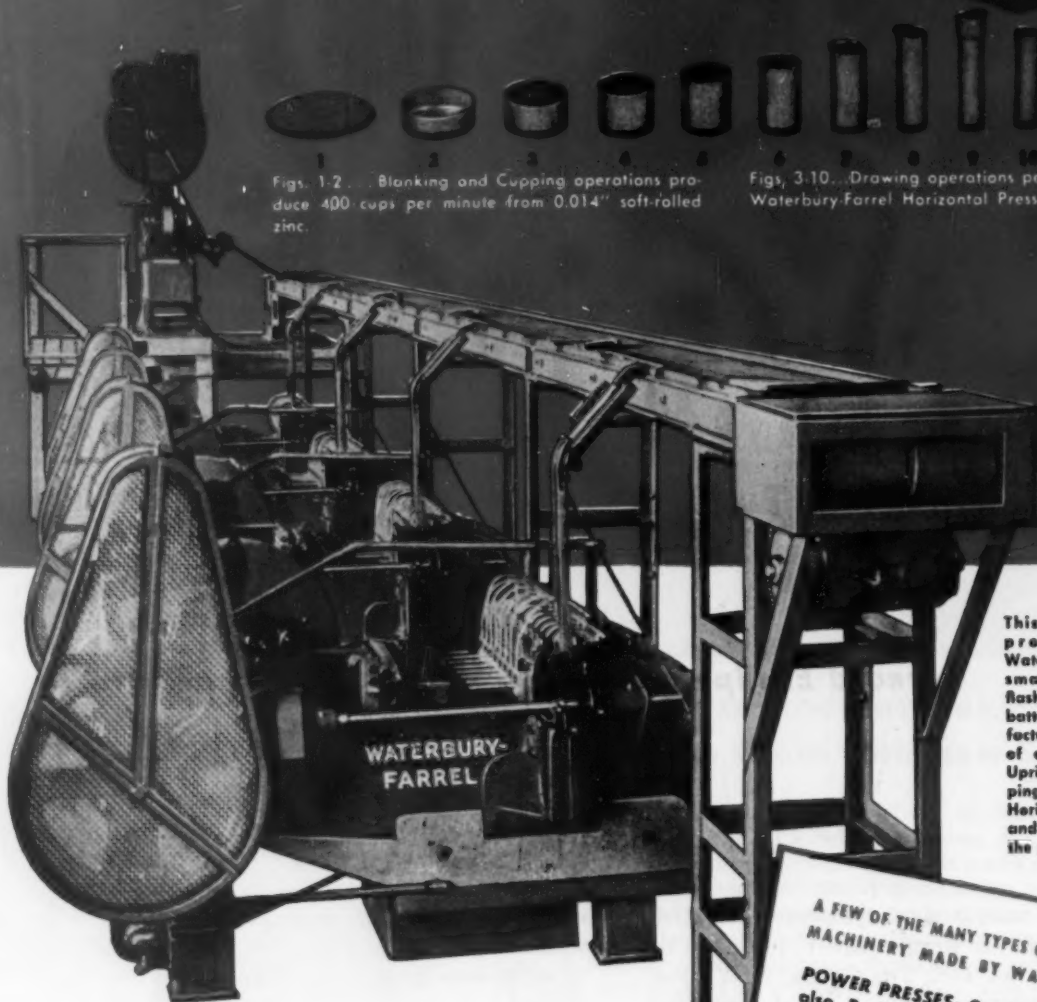
Since then Bernie has been a director of the Bronx Board of Trade, director of the Bronx County Grand Jurors Assn., served as Iron & Steel Chairman of the Cancer Committee in 1953, is presently Chairman of Iron & Steel Div. of the 1954 Salvation Army Drive in the Bronx.

Bernie was recently cited by National Production Authority for work as Chairman of the Bronx Scrap Mobilization Committee during 1952. Scope of his responsibilities can be better appreciated when it is realized that the population of The Bronx equals cities of St. Louis and Cincinnati combined.

In his hard-won vacations and spare time Bernie is torn between the attraction of deep-sea fishing off Montauk Point and another try at breaking 90 on the links at Elmwood Country Club.

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Figs. 3-10 . . . Drawing operations performed by each Waterbury-Farrel Horizontal Press.

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The Iron Age INTRODUCES

Carl R. Sare, appointed president, **W. W. Sly Mfg. Co.**

David H. Boyd, elected executive vice-president, **Union Supply Co.**, and **Homewood Stores Co.**, Pittsburgh.

A. L. Woods, appointed assistant to vice-president of metal sales and procurement, **Calumet & Hecla, Inc.**, Chicago.

Myron A. Tracy, appointed manager of Washington, D. C. office, **The Garrett Corp.**

Russell P. Smith, becomes manager, industrial relations department, Special Product Div., **Ford Motor Co.**, Dearborn, Mich.

R. B. Allard, appointed manager of primary producing units, **Great Lakes Steel Corp.**, operating department; and **William F. McGarity**, promoted to superintendent of steel production.

Wayne E. Kuhn, named general manager, Research and Technical Dept., **The Texas Co.**, New York.

Francis T. Eddy, named assistant manager, **Technicraft Laboratories, Inc.**, Thomaston, Conn.

E. Fred Buehring, named plant manager, aircraft overhaul and modification center, **Temco Aircraft Corp.**, Greenville, Tex.

David W. Davenport, becomes sales manager, **The S-P Mfg. Corp.**, Cleveland.

W. T. Bosworth, appointed manager of sales, Rotary Hearth Furnace and Heat Treating Equipment, **Salem-Brosius, Inc.**, Pittsburgh.

James R. Harwood, appointed sales manager, Transo Div., **Le Roi Co.**, Milwaukee.

Harry J. Duffy, appointed manager of sales in Wisconsin, Minnesota, and Michigan territories, **Trent Tube Co.**, Pittsburgh.

Rembert C. Alley, becomes manager of railroad equipment sales, Marketing Section, **General Electric Co.'s**, Locomotive and Car Equipment Dept., Erie, Pa.; **Robert A. Williamson**, promoted manager, railroad locomotive sales; and **Norman W. Seip**, elected manager of advertising, sales promotion, and marketing personnel development.

Frank M. Goodman, appointed district sales manager for Ohio, Western Pennsylvania, and Eastern Michigan, **Maurey Mfg. Corp.**

Gerard S. Lazzara, appointed Texas, Oklahoma and Louisiana district manager, Tool and Wheel Div., **American Coldset Co.**

C. M. Rhoten, named factory manager, Herbrand Div., **The Bingham - Herbrand Corp.**, Fremont, Ohio.

Charles H. Ducoté, becomes export manager, **Trailmobile Inc.**, Cincinnati; and **Jack R. Kruienga**, named used trailer manager.

William A. Depew, appointed claims manager, **Kaiser Steel Corp.**, Oakland, Calif.

L. B. Harmon, appointed assistant general traffic manager, Oakland, Calif., headquarters, **Kaiser Aluminum & Chemical Corp.**; and **James A. Cole**, assigned as technical specialist, in Chicago extrusion product office.

PERSONNEL



JAMES A. VAUGHN, named president and general manager, **Vaughn Machinery Co.**, Cuyahoga Falls, Ohio.



G. W. BROWN, elected vice-president, **Wagner Electric Corp.**, St. Louis.



W. N. BARKER, appointed vice-president and assistant to the president, **Pullman-Standard Car Mfg. Co.**



CHARLES T. EVERETT, appointed executive vice-president and general manager, **Beaver Pipe Tools, Inc.**, Warren, Ohio.

Carl W. Larrick, appointed works manager, The Morris Machine Tool Co.

W. Dee Shepherd, named sales manager, Atomic Power Div., Westinghouse Electric Corp., Pittsburgh; S. F. Davies, appointed sales manager; and C. B. Leape, becomes engineering manager of Micarta Div., Trafford, Pa.

J. P. O'Brien, appointed sales manager, Building Steel Products, United States Gypsum Co., Chicago; and Edward Pappert, becomes district manager, Pittsburgh district.

William R. Murdock, appointed to commercial sales manager, Trion, Inc., McKees Rocks, Pa.

Robert H. Pritchard, Jr., named sales representative, Atlanta office, Allis-Chalmers Mfg. Co.; Joseph D. Vincent, Memphis office; Warren F. Spanutius, San Antonio office; and James R. Mills, Beaumont office.

James Cowman, Jr., joins as sales representative, Aircraft and Industrial Metal Spinners, Hanson Bros., Whittier, Calif.

Joseph Tykodi, appointed as factory sales representative for Western New York territory, Axelson Mfg. Co.

G. H. Weight, named southwest district sales manager, Tubular Products Div., The Babcock & Wilcox Co., Beaver Falls, Pa.

Warren H. Nugent, appointed representative in Michigan and Northern Ohio, Uddeholm Co. of America, Inc., New York.

James H. Hennessey, joins industrial sales and service staff, Wyandotte Chemicals Corp., Mich.

Richard R. Senz, named chief metallurgist at Buffalo works, Aluminum Co. of America.

Wilson L. Young, becomes new chief service engineer, Colonial Broach Co., Detroit.



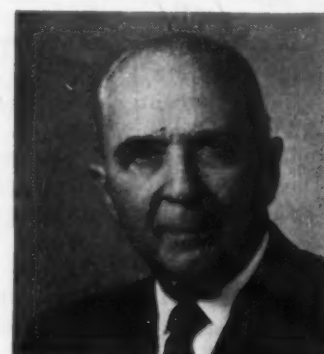
WALTER ST. ONGE, JR., becomes advertising manager, The Torrington Co., Conn.



CHESTER A. SELLEN, named assistant general manager and chief metallurgist, Eaton Mfg. Co., Massillon, Ohio.



ROBERT A. EMBREE, appointed process and plant engineer, Chanderly Electric Co., St. Louis.



L. A. VAUGHN, becomes chairman of the board, Vaughn Machinery Co., Cuyahoga Falls, Ohio.

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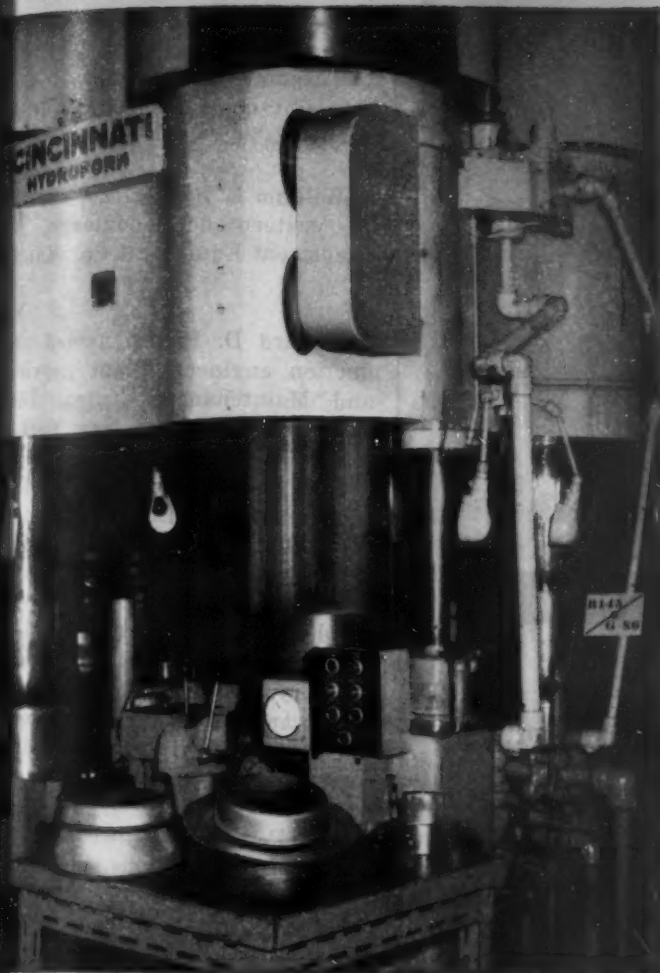
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Fig. 1: 1st Hydroform Operation



Fig. 2: 2nd Hydroform Operation

A 1 7/8" dia. blank of 0.064" Nimonic 75 is first drawn to shape shown in Fig. 1. The punch consists of two principal elements: a segmented top and a solid base for forming the shape as shown in Fig. 2. The top, segmented section of the punch is shown at right on the table in the photograph above. Completed part and 1st operation shell are also shown. An annealing operation is used between the 1st and 2nd draws to reduce the grain size. To achieve additional clarity of outline at the neck section, the part is rolled after trimming.



Hydroform

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Theodore W. Crouch, joined advertising department, A. M. Byers Co., Pittsburgh.

William F. Rutherford, appointed eastern field engineer, Air Placement Equipment Co., Kansas City.

Edward D. Hayes, named production engineer, Plant Services and Maintenance, Central Div., Continental Can Co., New York.

E. B. Severs, appointed development engineer, Erection department, Boiler Div., Babcock & Wilcox Co., Barberton, Ohio.

John B. Kaymen, appointed field engineer in Boston-Rhode Island territory, Lamson Corp., Syracuse, N. Y.; and Edward T. Bialasewski, becomes field engineer in Los Angeles area.

Earl P. Smith, named director of Industrial Relations, Cleveland Pneumatic Tool Co.

Marcus E. Borinstein, becomes associated with commodity department, Shearson, Hammill & Co., Chicago.

James F. Niblick, appointed secretary-treasurer and controller, Springs Div., Borg-Warner Corp., Chicago.

James Rush, joins the sales force of Electro Refractories & Abrasives Corp., of Buffalo, and will be grinding wheel representative, Indianapolis territory.

Frederick W. Smith, appointed superintendent of production, Penn Machine Co., Johnstown, Pa.

OBITUARIES

F. Lloyd Woodside, 58, president of Park Chemical Co., Detroit, recently.

Alfred J. Porter, 58, vice-president and director, Heppenstall Co., Pittsburgh steel forgings manufacturer and manager of the company's plant at Bridgeport, Conn., recently at his home in Bridgeport.

On large gears—

Induction Hardening Improves Gear Life Shortens Heat Treating Cycle

By W. L. Walz

Product Tester,
Engineering Dept.
International Harvester Co.
Evansville, Ind.

◆ Improvements in induction hardening techniques have resulted in increased tooth hardness on large gears, adding greatly to gear life . . . Localized heating reduces tooth distortion and gives quieter gear train operation . . . Selective hardening is readily achieved, giving certain areas a higher degree of hardness and leaving other areas free from distortion.

◆ Reduced costs result from direct as well as indirect savings . . . Heat treating time is only a matter of minutes . . . Equipment, being small, requires little floor space and saves on manufacturing cost . . . Replicas of oxide stringers, a cause of pitting, can be kept for reference by a newly devised method.

◆ MUCH PROGRESS has been made in recent years in induction hardening of large gears. Because it offers advantages over the conventional furnace hardening method, induction hardening has steadily gained favor with metallurgists in heavy industry. Among the chief advantages are the greater degree of tooth hardness with a minimum of distortion and the great reduction in heat treating time.

Gear steels are generally divided into two main classes—case hardening steels and full hardening steels. The former steels have a carbon content in the range of 0.15 to 0.25 pct and contain varying proportions of one or more common alloying elements such as nickel, chromium, molybdenum, and manganese. These steels are usually carburized to a case depth of 0.030 in. or more depending on the pitch of the gear teeth. Carburizing is followed by quenching and tempering treatments.

The full hardening steels contain carbon in the range of 0.45 to 0.55 pct and do not necessarily contain an alloying material. Common

practice has been to heat these steels in a furnace to the hardening temperature of 1450° to 1550° F, oil quench (or in the case of plain carbon steels a water quench) and finally temper for gear tooth toughness.

Final drive gears for tractors are usually too large to carburize and harden successfully. Their design is such that die quenching is necessary, thus complicating heat treating procedures.

Before the development of the induction hardening, final drive gears for tractors were made of alloyed steel and heat treated after machining. As there is a great range of hardenability in various heats of a given alloy steel, distortion during hardening created a serious problem in gear making. In the induction hardening process, heating is localized at the gear teeth. This allows other portions of the gear to resist distortion.

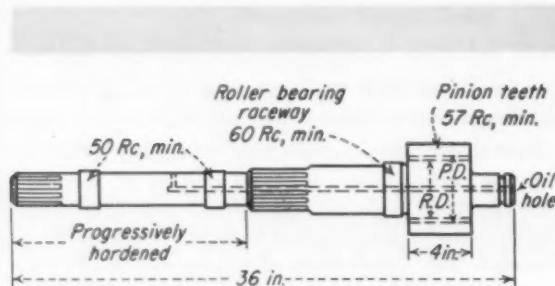
Plain carbon steel is substituted for the more costly alloy steels whenever possible when using the induction hardening method. The sprocket drive pinion and shaft were made of 8645H steel,

"Tests are usually made at loads higher than those in service to determine weaknesses in the system and speed testing . . ."

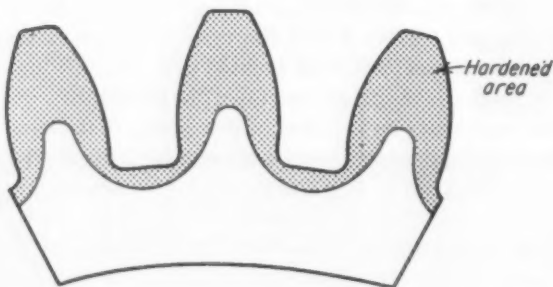
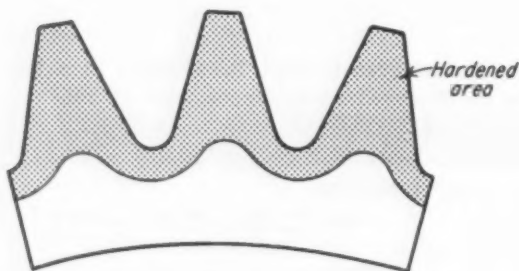
mainly for added shaft strength to carry high torque loads. The mating gear, however, was made of unalloyed C1050 steel.

Most of the investigation on experimental parts was done on a "four square" dynamometer. This machine consists of two complete assemblies of transmission, planetary, and final drive units mounted back to back. They are connected on the transmission end by a drive shaft and on the sprocket drive end with a track chain.

The torque load is applied to the planetary system and is recorded by means of a strain-gage dynamometer. Tests are usually conducted at loads in excess of those anticipated in service to determine weaknesses in the system and in some cases to accelerate the testing. In evaluating the induction hardening of final drive gears, the machine was operated in second gear to reduce testing time.



ONE-PIECE final drive shaft and pinion, forged from 8645H steel, was hardened to three different values. Pinion was hardened first.



SECTIONS of sprocket drive gear (top) and pinion (bottom) show induction hardening patterns which approach contour hardening.

The final drive gears in this investigation were relatively large pitch (25) with a 4-in. tooth width and 22° pressure angle. To give greater strength to the pinion teeth, the gears were made to the 1.5 long and short addendum system. The pinion teeth were required to carry loads up to 49,000 psi bending stress and 308,000 psi compressive or contact stress for short periods of time. Normal operating loads were 27,000 psi bending stress and 226,000 psi contact stress with a pinion torque of up to 65,000 in.-lb.

Heat treating was complex

Both the 6-in. OD sprocket drive pinion with 12 teeth and the 31.2-in. OD sprocket drive gear with 77 teeth were induction hardened. On the first samples, the pinion teeth were straight shaved while those of the mating bull gear were crown shaved with a 0.002 to 0.004-in. crown. After testing, it was found advisable to straight shave the bull gear and taper crown shave the pinion. It was also necessary to modify the involute of both the bull gear and pinion teeth.

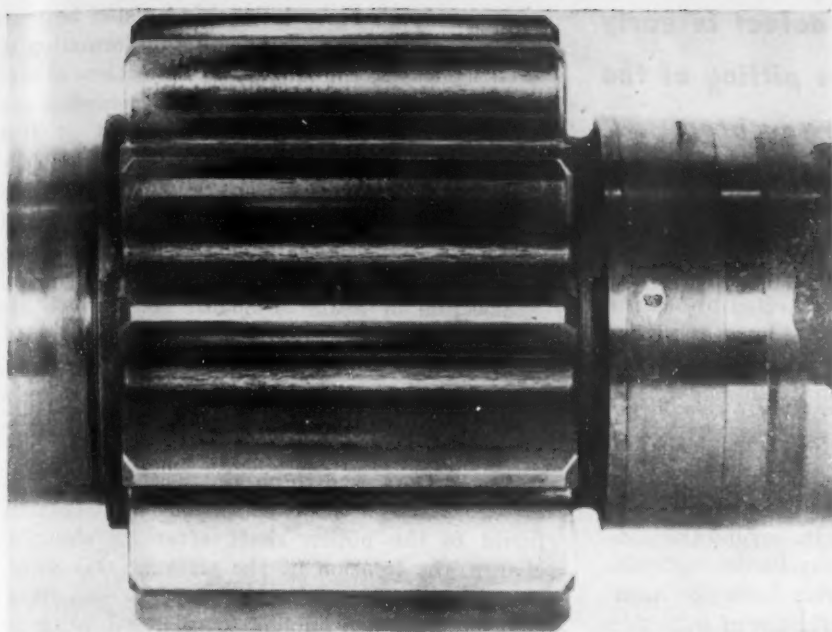
The final drive gear was forged from C1050 steel and normalized prior to machining. After machining, it was preheated in a furnace to 600°F and transferred to the induction heating unit. There it was rotated slowly and heated for 85 sec, using an input of 370 kw followed by a time delay of 8 sec. It was then quenched for 24 sec with water injected against the gear teeth. Next, it was tempered at 450°F to a minimum hardness of 55 RC.

The one-piece final drive shaft and pinion was forged from 8645H steel. The forging was water quenched from 1550°F and tempered to 30 to 37 RC to attain the necessary shaft strength. Next to the teeth, splines and bearing raceways were machined with allowances for finish grinding of the raceways after hardening. Since a roller bearing raceway requiring a maximum hardness (60 RC minimum) was located within ½ in. of the highly stressed pinion teeth, the problem of heat treating was complex.

Maintain hardness variation

To maintain the desired hardness variation, it was necessary first to induction harden and temper the pinion teeth to 57 RC. The adjoining raceway was then induction hardened and tempered to the higher specified value.

Early preproduction pinions were induction hardened using 150 kw input for 75 sec followed by a 2-sec delay before being submerged into an oil spray quench. They were then tempered at 380°F to obtain a minimum hardness of 55 RC. This induction hardening cycle produced a fully hardened tooth without the desirable properties of contour hardening. Next, the bearing race-



TAPER CROWN shaving improved the appearance of contact surfaces on pinion teeth. Previously, heavy pitting had occurred on inner ends.

ways were induction hardened. Heat treating modifications were made to produce contour hardening in the pinion teeth.

After machining, the pinion shaft was preheated to 300°F in a furnace, transferred to the inductor block and inductively heated, using a power input of 370 kw for 17 sec. A delay time of 2 sec was followed by an oil spray quench in the inductor block for 51 sec with 32 psi oil pressure. During both the heating and quenching cycles, the part was rotated slowly inside of the inductor block.

The pinion was tempered at 380°F to a minimum hardness of 57 RC. After hardening the teeth, the raceway adjoining them was induction hardened, during which time the teeth had to be protected from further induction heat.

Use modified involute tooth

Another modification was made to add strength to the small end of the shaft and thus eliminate spline and oil hole failures. Instead of hardening only two selected areas on the small end of the shaft, the whole end of the shaft, including the spline, was hardened progressively. For this progressive hardening, a power input of 100 kw was used, oil quenching was progressive, and tempering was done at 250°F.

Pinion tooth failures occurred on the first pre-production pinions produced. At the base of contact of the pinion there was a narrow area which was gouged while the tips of the mating bull gear teeth wore excessively. The pinion teeth started to fatigue from the point of gouging and progressed until a tooth was completely broken through.

This combination of gear and pinion was originally machined to conform to the standard involute pattern, i.e., following a true involute on both gear and pinion. After much testing, a

modified involute pattern was perfected. Use of this modified involute tooth eliminated failures due to gouging.

Elimination of this problem did not solve all gear problems. On test pinions run at 200 pct normal load in the laboratory, serious pitting was occurring on the inner half of the pinion teeth, the half furthest from the bearing. On field test tractors, tooth contact was also heavier on the inner ends of the pinion teeth with slight pitting on the inner portions of the teeth.

Contact under load was much improved by taper crown shaving the pinion with a 0.006 to 0.009-in. taper and a 0.001 to 0.002-in. crown on each side of the tooth. The mating bull gear was straight shaved instead of crown shaved. After 300,000 cycles of laboratory testing at 200 pct normal load, the appearance of the taper crowned pinion was much better. No tooth pitting was noted in the taper crown shaved pinion.

Due to the necessity of having to harden the pinion teeth prior to hardening the adjacent roller bearing raceway, a problem arose from the relative closeness of these areas. The pinion teeth were induction hardened and then tempered at 380°F to obtain tooth toughness while the adjacent raceway was subsequently induction hardened for maximum hardness and tempered at 250°F to secure best wearing qualities.

After 50,000 cycles at normal load on the dynamometer, tiny cracks began to appear in the root area of the pinion teeth. These cracks were at the end of the pinion adjacent to the bearing raceway. Magnaflux, Magnaglo, Zyglo checks on parts taken before they were subjected to load failed to show any evidence of cracks.

A peculiarity of these cracks was that they appeared on both the loaded and unloaded sides of the pinion teeth. They were presumed to result from high residual stresses set up in the

"Another defect in early test stages was pitting of the roller bearing raceway area . . ."

ends of the pinion teeth during heat treating of the adjacent bearing raceway.

To study the effects of the induction heating pattern, a pinion shaft was subjected to bearing raceway hardening only. The temper color pattern showed that the induction heat was jumping across to the ends of pinion teeth during the hardening operation.

Use of a female spline of solid copper as a shield eliminated this type of incipient failure. The copper cap was fitted over the hardened pinion teeth and extended $\frac{1}{8}$ in. beyond the ends of the teeth during the raceway hardening cycle. A number of pinion shafts were induction hardened in this manner and no evidence of induction heat temper color pattern was found on the ends of the pinion teeth.

Tests on pinions heat treated in this manner proved the method to be effective in eliminating cracks in the tooth area. As a further precaution, a $\frac{3}{16}$ in. full-depth radius was machined between the pinion teeth and the bearing raceway area. It served to retard conduction of heat toward the ends of the pinion teeth and also gave a more uniform pattern of hardening in the bearing raceway areas.

Detect oxide stringers

Another common defect in the early test stages was pitting of the roller bearing raceway area. Micrographs of selected samples of steel in the bearing raceway area revealed the presence of oxide stringers. These stringers were numerous in this area and their presence could be detected by Magnaflux inspection.

To prove that a relationship existed between the presence of stringers and the formation of pits, replicas of the Magnaflux indications around the roller bearing raceway were recorded and the location of each replica marked so that Magnaflux patterns could be checked periodically during testing of the pinion. This method showed how pitting progressed from the areas in which the original Magnafluxing indicated the presence of stringers.

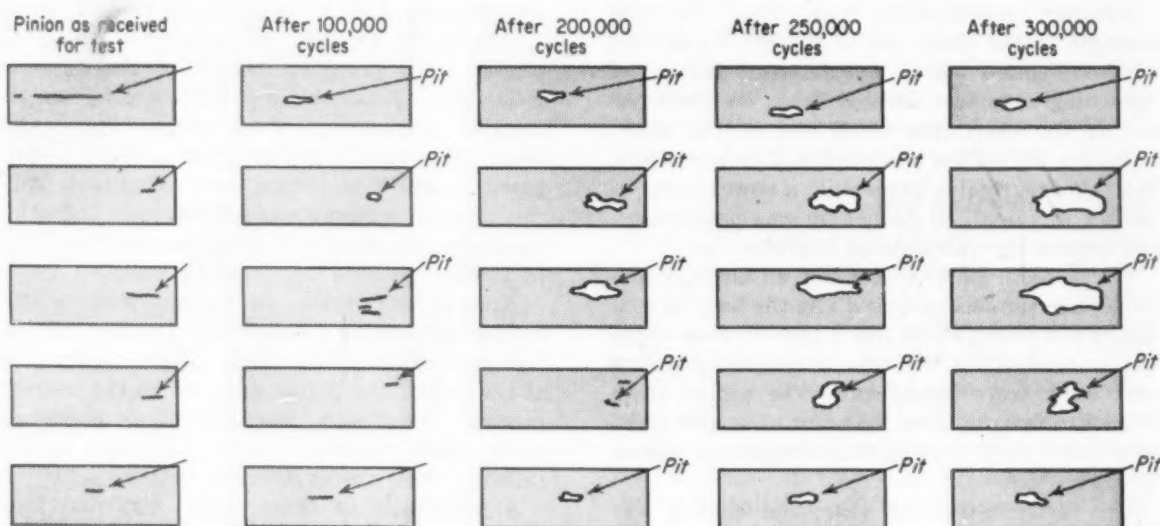
Selection of heats of 8645H steel which are relatively free of large oxide stringers can greatly minimize pitting of the bearing raceway. Before actual production, the part was redesigned to circumvent this problem but the information gained was of value.

The method used to obtain these replicas was novel. Through the application of Magnaflux liquid to the pinion shaft after an electrical charge, the location of the stringer was determined by the Magnaflux buildup. Carbon tetrachloride was then applied to each indication by means of an eye dropper to remove the oily substance from the liquid, thus leaving a dry Magnaflux over the stringer area.

The dry Magnaflux buildup was then transferred to a transparent adhesive tape by pressing the tape onto the area of buildup. On removing the tape, an excellent replica adhered to the tape and could be preserved for future reference. Carrying this a step further, the pieces of tape were mounted on vellum paper so that prints could be made.

Acknowledgments

The author expresses appreciation to managerial staff members of International Harvester's Engineering Materials Research and Testing Laboratory for their guidance of this project, and to colleagues in the department for their assistance. The author particularly acknowledges the help of H. B. Knowlton, F. Sailer, R. F. Pinter, A. A. Fask and F. Kuypers.



REPLICAS of Magnaflux indications show how oxide stringers develop into pits on roller bear-

ing raceways. Magnaflux buildup is transferred to adhesive tape and made into prints.

Properties change—

How Radiation Affects Structural Materials

By C. R. Sutton

Senior Metallurgist
Metallurgy Div.
Argonne National Laboratory
Lemont, Ill.

D. O. Leeser

Reactor Materials Engineer
Nuclear Power Development Dept.
Detroit Edison Co.
Detroit

Part II

- ◆ Nuclear reactors, as peacetime sources of power, will pose new problems for engineers and metallurgists . . . Both the mechanical and physical properties of commonly used structural materials are affected by radiation.
- ◆ Small consistent density changes have been recorded for stainless steel and cobalt and nickel based alloys . . . Density decreases and slight increases in length were noted for carbides . . . Both magnetic susceptibility and electrical resistivity of stainless steels are affected.

◆ **MECHANICAL AND PHYSICAL** properties of metals commonly used in nuclear reactors are affected by irradiation. As reactors come into use as sources of peacetime power, common structural materials will be widely needed for the reactor proper, for operating and control devices, and for many maintenance requirements. The changes in metal properties resulting from radiation exposure will be increasingly important to engineers and metallurgists concerned with production of materials and design of components for reactor use.

To obtain more complete data on irradiation effects, a series of tests were made under a range of irradiation and temperature exposures. Because of limited in-pile areas, special subsize specimens were used. Standard test equipment was adapted for restricted space and remote control manipulation.

Materials generally show higher yield strengths, lower percentage elongation and somewhat higher ductile-brittle transition temperatures. Hardness and tensile strengths are increased, Figs. 1 and 2. The temperature of irradiation appears to be important to the degree that annealing or tempering takes place. Samples irradiated at elevated temperatures show less effect than those irradiated at near room temperature.

Determination of tensile strengths for a number of materials is described in Part I of this article which appeared in the Aug. 19 issue of

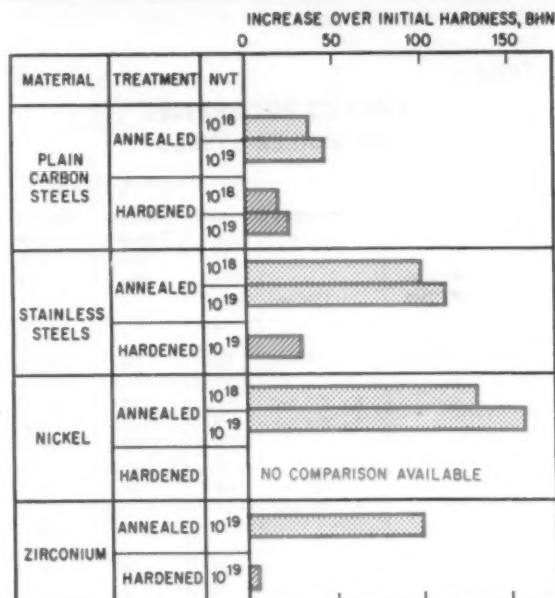


FIG. 1—Effect of irradiation dosage on hardness of structural materials used in reactors.

"Hardness, impact properties, and density of standard materials were changed slightly as a result of irradiation, the studies showed."

TABLE I

HOW RADIATION AFFECTS HIGH-DENSITY MATERIALS

Material, Type	Condition	Elongation in 2 in., Pct	Ultimate Tensile Strength, psi
"Tantalloy"	Unirradiated	29	136,000
	Irradiated	14	167,000
	Irradiated	14	163,900
Average Change, pct		-15	+20
Tungsten	Unirradiated	0	145,500
	Unirradiated	0	160,000
	Irradiated	0	132,000
	Irradiated	0	102,000
Average Change, pct		None	-22 ²
Tantalum	Unirradiated	19	72,000
	Unirradiated	23	85,000
	Irradiated	17	88,000
	Irradiated	17	85,000
Average Change, pct		-4	+26
"Tantung G"	Unirradiated	5	72,500
	Irradiated	4	88,500
	Irradiated	4	72,000
Average Change, pct		-1	None

¹ Estimated integrated flux values of 1×10^{19} nvt slow and 5×10^{19} nvt fast.

² Decrease partly due to difficulty of aligning the brittle specimens by remote control.

THE IRON AGE. Further tensile tests were made however on tungsten, tantalum, Fansteel Metallurgical Co.'s Tantalloy, and Vascoloy-Ramet's Tantung G. Round tensile specimens with 0.113 in. gage diam and $\frac{3}{8}$ in. diam, by $\frac{3}{4}$ in. long cylinders were irradiated.

TABLE II

IMPACT PROPERTIES OF BOILER STEELS

Material, ASME Type	Exposure Conditions		Change in Transition Temp., Deg. F	Change in Maximum Energy, Pct
	Flux, nvt	Temp., Deg. F		
SA-70	7.5×10^{19} slow	125	+125	-41
SA-212	8×10^{19} fast 9×10^{19} slow	125	+115	-23
			+170	-29
	2×10^{18} fast 8×10^{18} slow	580	+45	-5
		425	+35	-7
Aluminum-Killed 0.34 Carbon Steel	2×10^{18} fast 8×10^{18} slow	425	+20	-4
		390	+20	-2
		350	+20	-4

Hardness changes on the tungsten and tantalum-tungsten alloy were insignificant. Tantalum hardness increased 8 points to RA 57. Ultimate tensile strengths for the three materials, Table I, increased from 20 to 25 pct. Ductility did not change for tungsten but decreased 20 pct for tantalum and 50 pct for the tantalum-tungsten alloy.

Flat ASTM standard tensile specimens of Nickel-A and Hastelloy-C were irradiated at 500°F. Tensile test results, Table III, indicate a slight increase in yield and ultimate strengths and a slight decrease in ductility.

Irradiation caused little change in the ultimate

TABLE III

TENSILE PROPERTIES OF NICKEL-A AND HASTELLOY-C

Material, Type and Specimen Number	Condition	Yield Strength		Elongation in 2 in., Pct
		Ultimate Tensile Strength, psi	0.2 Pct Offset, psi	
Nickel 1	Irradiated	69,500	28,000	33.5
Nickel 2	Irradiated	69,500	27,000	34.6
Nickel 3	Unirradiated	67,500	22,000	44.8
Nickel 4	Unirradiated	64,500	(2)	(2)
Hastelloy C-1	Irradiated	142,000	62,500	42.0
Hastelloy C-2	Unirradiated	133,500	61,000	53.5

(1) Flat tensile specimens, 0.07 and 0.15 in. thick. Calculated nvt on irradiated specimens of 1×10^{19} slow in 400°-500°F flowing water.

(2) Extensometer failed.

TABLE IV

HOW RADIATION AFFECTS DENSITY

Group ¹ Number	Material	Average Density, gm/cc ²		Average Change, Pct
		Pre-Irradiation	Difference, Post-Irradiation	
I Stainless Steels	316	7.995	-0.005 ± 0.002	-0.06
	347	7.938	-0.007 ± 0.002	-0.09
	347 + Ta	7.942	-0.003 ± 0.001	-0.04
	410	7.675	-0.004 ± 0.001	-0.05
II Nickel-Base Alloys	Nickel-A Monel	8.894	-0.006 ± 0.002	-0.07
		8.836	-0.004 ± 0.003	-0.05
III Cobalt-Base Alloys	Stellite 3	8.550	+0.005 ± 0.002	+0.06
	Stellite 6	8.330	+0.009 ± 0.001	+0.11
IV Carbon Steel	SA-212	7.850	0 ± 0.003	0

¹ All irradiated at 70°-140°F for 2×10^{20} nvt slow and 3.5×10^{19} nvt fast.

² Average of nine Charpy V-notch specimens of each type material.

MAGNETIC SUSCEPTIBILITY OF STAINLESS STEELS

TABLE V

Material, Type	Guoy Method ^{1,2}		
	10 ⁻⁶ cgs		Increase, Pct
	Before Irradiation	After Irradiation	
3C4	31.98	202.47	533
3C4	33.74	211.83	528
3C9	31.65	88.30	179
316	29.17	228.74	684
347	31.74	210.28	563

¹ Calculated nvt of 1 x 10¹⁹ slow.

² Determined by ratio of volume susceptibility to density.

mate tensile strength of Stellite 3 specimens. Yield strength and elongation were not determined in view of the materials' low ductility.

Impact strength test results may be divided into two groups. The first includes specimens exposed to relatively high integrated fluxes at a relatively low temperature, 125°F. The second includes specimens exposed to relatively low integrated fluxes at relatively high temperatures, 390° to 580°F. Since tests were conducted on subsize specimens, little significance is attached to the absolute values of energy absorption or of transition ranges.

ASME types SA-70 and SA-212 boiler steels used in these tests, Table II, have similar chemical compositions. Effects of irradiation were similar: A general over-all increase in ductile-brittle transition temperature and a decrease in maximum-energy fracture values. When the materials were exposed to high flux and low temperature, the transition-temperature ranges were from 115° to 170°F higher for irradiated specimens than for unirradiated control specimens. At low flux and high temperature, transition temperature ranges increased only 20° to 45°F.

Maximum energy values were correspondingly decreased more than when exposed to high flux-low temperature than when exposed to low flux-high temperature. These effects were not as pronounced on aluminum-killed 0.34 carbon steel, probably due to the smaller grain size imparted by the aluminum. Fine-grain size tends to promote lower transition temperatures, other things being equal.

Fatigue strengths of type 304 stainless steel, of Grade I crystal bar zirconium, and of a double-melted 2½ pct tin-zirconium alloy appear un-

Material	Treatment	Magne Gage Method ^{1,2}			
		Magnet ² Number	Before	After	Relative Increase, Pct
329	Annealed	4	3	3	0
347 Cb-Ta	Annealed	4	2	4	100
	Shot Peened	4	2	9	350
431	Hardened	1	100	114	14
	Annealed	1	105	125	20
442	Annealed	1	117	124	5
446	Hardened	1	103	85	-18
Armco 17-4 PH	Hardened	1	110	114	4
	Hardened	1	100	111	11
	Malcomized	1	47	82	30
U. S. Steel "W"	Hardened	1	110	121	10

¹ Exposure in flowing water at 540°F with calculated nvt of 3 x 10¹⁹ slow.

² Magnet numbers refer to field force, not to a specific value. Number 4 is stronger than 1, but no correlation is available.

TABLE VI

ELECTRICAL RESISTIVITY

Type	Electrical Resistivity,* micro-ohm-cm	
	Before	After
Stainless Steels		
304	80.2 at 28.0 C	80.4 at 27.8 C
309	79.9 at 27.5 C	82.01 at 27.0 C
316	77.0 at 28.4 C	78.01 at 28.4 C
347	75.5 at 26.2 C	75.94 at 27.3 C
Nickel-Base Alloys		
Nickel-A	9.8 at 27.0 C	9.63 at 27.2 C
Hastelloy-C	126.5 at 26.2 C	133.80 at 27.8 C

* Average values.

affected by irradiation at 10²⁰ nvt slow and 10¹⁹ nvt fast. Exposure temperatures were 140° and 540°F. No significant changes were observed from the comparison of S-N fatigue curves of control versus irradiated specimens.

In studies of physical properties, density and dimensional stability, magnetic susceptibility and electrical resistivity were also found to be affected by irradiation.

Large density changes have been confined to sintered carbides. Significant density changes on other materials have shown 0.06 pct decreases

"Electrical characteristics as well as the mechanical properties of materials were affected . . ."

for stainless steels and nickel base alloys, 0.09 pct increases for cobalt base alloys, and no changes for carbon steel specimens irradiated simultaneously.

While most density changes fall within the ± 0.05 pct limits of experimental accuracy, small consistent changes were recorded after irradiation on standard Charpy V-notch specimens. Nine specimens of each material listed in Table IV were irradiated at 70° to 140°F for 2×10^{20} nvt slow and 3.5×10^{19} nvt fast.

Rectangular transverse-rupture specimens $\frac{1}{4} \times \frac{1}{4} \times 2$ in. long, and cylindrical specimens, $\frac{3}{8}$ in. in diam $\times \frac{3}{4}$ in. long of tungsten carbides and tantalum carbides with cobalt binder were irradiated. Exposure was for calculated fluxes of 4×10^{19} nvt slow and 8×10^{19} nvt fast. Duplicate specimens of Carboloy grades 44A, 883, 905, 907, and 999 were included in the experiment. Post-irradiation measurements showed that some dimensional changes were above probable experimental error. Densities decreased from 0.3 to 0.6 pct without correlation to the slight dimensional changes.

Duplicate rectangular transverse-rupture specimens and cylindrical specimens (sizes as above) of titanium carbide with nickel binder (Kennametal 150A) were irradiated under the same conditions. Post-irradiation measurements showed specimen lengths were increased and widths decreased by 0.1 to 0.23 pct. Specimen densities decreased from 0.3 to 0.6 pct.

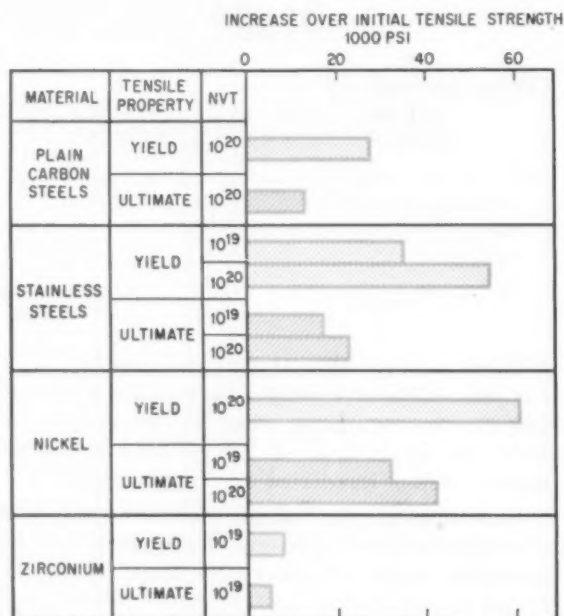


FIG. 2—Tensile properties of structural materials are also affected by irradiation.

Post-irradiation density measurements showed decreases of 0.10 and 0.15 pct for tantalum and tungsten and a decrease of 0.20 and 0.25 pct for the tantalum-tungsten alloy. These measurements were taken prior to tensile tests.

Irradiation probably causes some phase transformation from austenitic to ferritic iron, as indicated by magnetic susceptibility changes. However, the amount transformed is not of sufficient magnitude to show an appreciable increase in corrosion susceptibility of the more common stainless steel types.

Flat stainless steel tensile specimens tested at Oak Ridge were found to have increased magnetic susceptibility. The pre-irradiation value, Table V, was approximately 30×10^{-6} cgs; the post-irradiation value was approximately 200×10^{-6} cgs, an average increase of 500 pct. The type 309 material, 25 pct chromium-12 pct nickel, was less affected due to more stable austenite.

Austenitic, ferritic, and precipitation-hardening stainless steels were irradiated in 540°F flowing water. The test was conducted for an integrated flux value of 3×10^{19} nvt slow. Table V shows average magnetic-susceptibility values.

Electrical resistivity changed

The austenitic stainless steels, types 347 columbium-tantalum annealed, 347 columbium-tantalum shot peened, and 329 annealed, were only slightly magnetic before irradiation and the relative increases noted were large. The ferritic and precipitation-hardening alloys displayed higher initial values with relatively smaller increases.

The type 446 specimen showed a decrease in magnetic susceptibility. Moreover, a 5 pct decrease in magnetic susceptibility was also noted for flat tensile specimens of irradiated stainless steel type 446. The specimens were irradiated in 540°F flowing water for an estimated integrated flux of 5×10^{20} nvt slow and 4×10^{19} nvt fast.

Pre- and post-irradiation electrical resistivity measurements showed a 5 pct increase for austenitic stainless steels, types 304, 309, and 347. These changes were recorded for flat tensile specimens irradiated in flowing 540°F water for an estimated integrated flux of 5×10^{20} nvt slow and 4×10^{19} nvt fast.

Flat tensile specimens 0.075 and 0.15 in. thick were machined from quench-annealed stainless steels and nickel base alloys. The specimens were irradiated in flowing water at 400° to 500°F for an exposure calculated at 1×10^{19} nvt slow.

Post-irradiation tests performed at Oak Ridge indicated electrical-resistivity changes, Table VI, were low, possibly due to the annealing effect of the ambient temperature.

ACKNOWLEDGMENTS

Post-irradiation experimental work was performed at Argonne and Oak Ridge National Laboratories. Appreciation is due particularly to Messrs. Karl F. Smith, S. H. Paine, Jr., W. F. Murphy, and J. E. Kemme for their assistance and suggestions.

Transfer Devices Extend Automation in Press Shop

By A. B. Mooers

Manufacturing Engineer
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◆ Greater use of automatic handling devices is increasing production rates and improving safety in the Buick press shop at Flint, Mich. . . . Included in the latest setups are new transfer devices which move gas tank halves from a draw press and insert each stamping into the die of a trim press.

◆ Draw dies are unloaded automatically . . . A continuous belt carries drawn parts to the trim press . . . Stampings are loaded into the trim die by a gate, actuated by an air-operated slide . . . Another setup automatically feeds hood blanks to draw dies . . .

◆ AUTOMATIC handling devices are continually being added at the Flint, Mich., press shop of General Motors Corp.'s Buick Div. to promote safety and increase production rates. Among the latest is a new setup for mechanical transfer of gas tank halves from the die in which they are drawn to the die that does trimming and piercing in another press. Until recently, this transfer was done by a swinging and elevating arm that was slower and less precise than the newer setup.

In the present setup, blanks are fed by hand to a 450-ton press which performs the draw operation. Blanks are large enough to make two halves and, in the first stroke, are sheared in half and have corners trimmed. A continuation of the same stroke makes the draw, leaving the other half of the blank flat and ready for the next stroke. This second half is then fed, corner trimmed and drawn in the next stroke, being already sheared to size.

Unloading of the draw die is done automatically by an iron hand on each up stroke of the

press and the drawn part is dropped onto a continuous belt that runs in back of the press. This belt moves the halves in succession toward the second or trim press, a 200-ton C-frame type, but does not load the parts into the trim die since this requires positive action and the belt must stop short of the trim die.

Although the belt tends to move the drawn parts forward continuously, they are held back by a stop pin. When the trim die is opened and unloaded by hand, the pin retracts and a gate that has fallen back of the next stamping is advanced by the air-operated slide and pushes the stamping into the trim die.

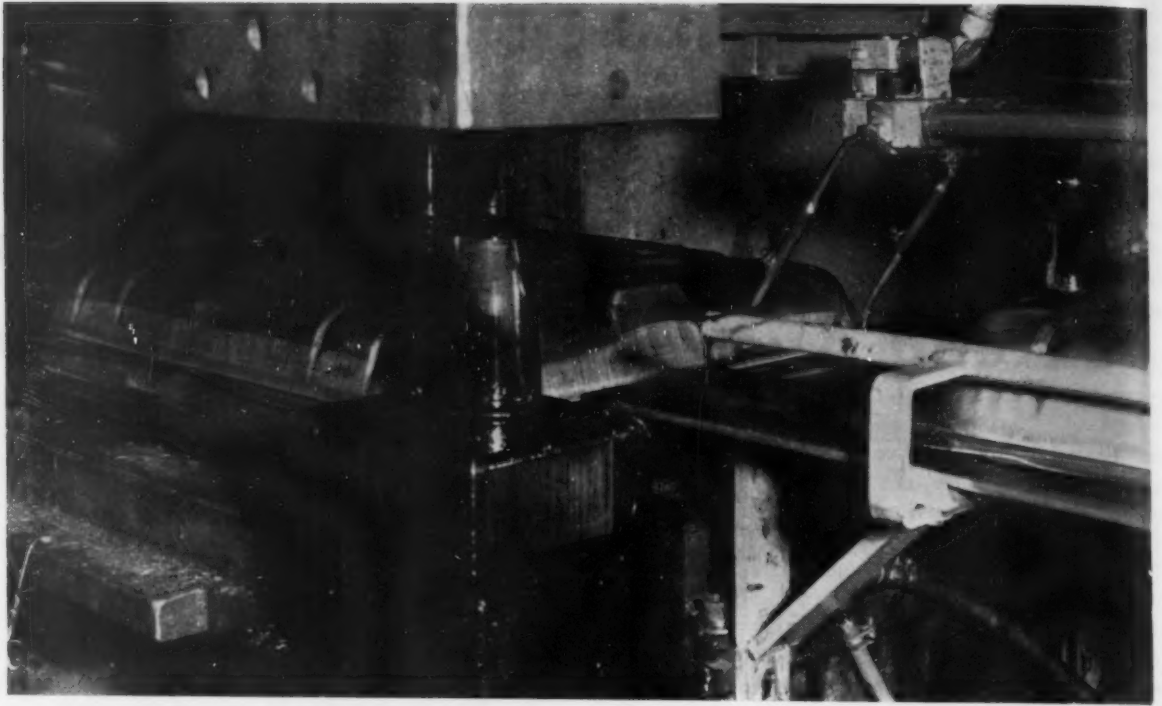
Since the slide has a fixed stroke, the stamping is always advanced the proper distance to drop over the lower half of the trim die and is in correct position for trimming as the die is closed. Upon reaching the end of its stroke, the slide and gate are retracted by the air plunger. The gate then rides on top of the next stamping. After passing across this stamping, it drops back and is then in position to advance the stamping when the die opens again and is unloaded.

Interlocks stop slide advance

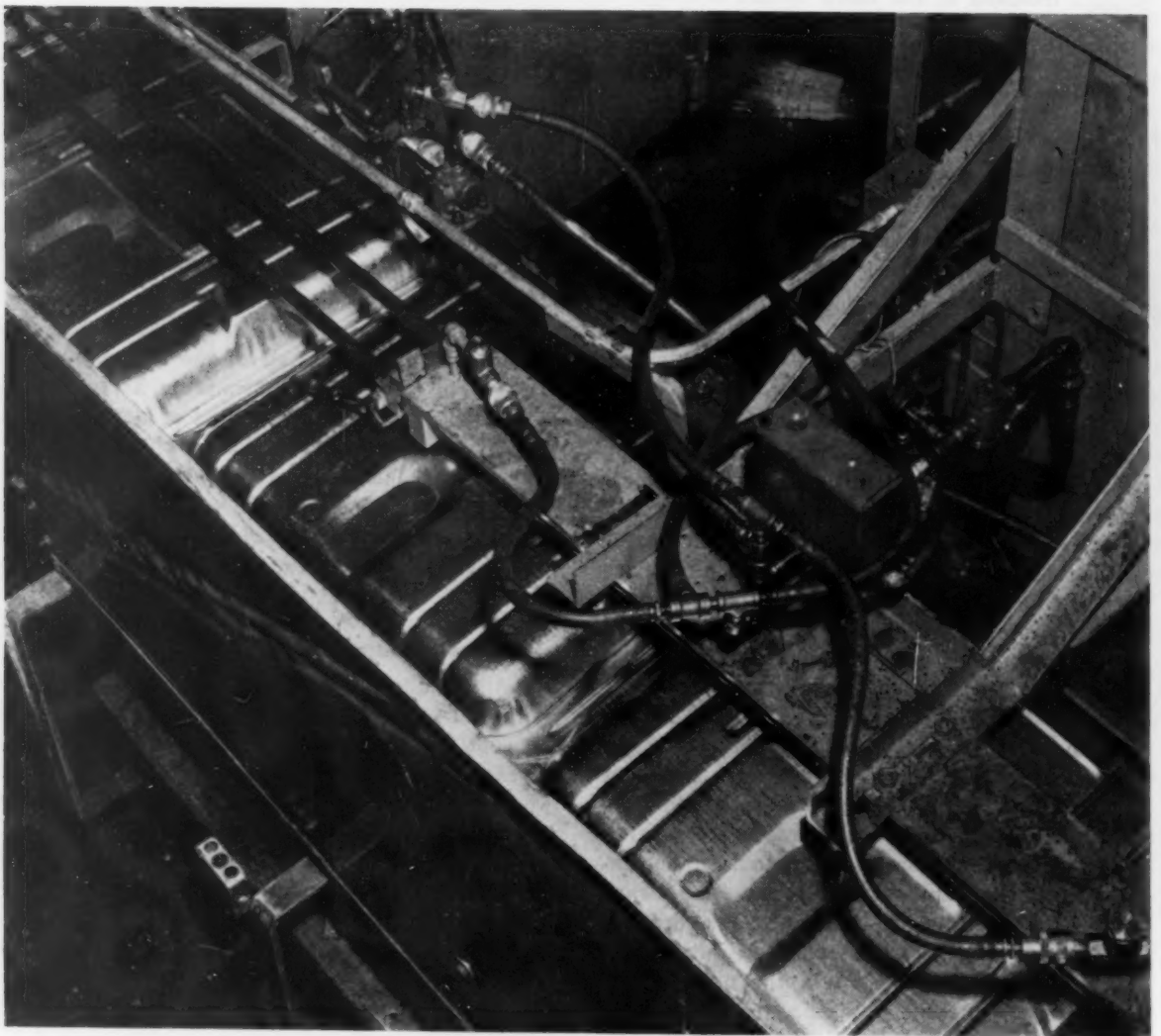
All handling of the stampings out of the draw die and into the trim die is done automatically except for pressing a button at the trim press when its die is ready for loading. Pressing this button lowers the stop pin and causes the slide to advance the next stamping into the die.

Interlocks prevent the slide from being advanced until the trim die is unloaded and ready to receive it. The draw press operator does not start its cycle until the stamping just drawn and ejected has been moved by the belt to provide space into which the iron hand can drop the next drawn part.

At the draw die, there are chutes down which



GATE operated by an air slide pushes drawn tank half into the trim die of the press.



CONTINUOUS belt and an intermittent air-operated slide transfer the drawn tank halves.

**"Higher production is attained
by an automatic device which
loads large blanks into a die . . ."**

stock trimmed from corners of blanks falls into tote boxes. Flanges sheared off in the trim die are severed into halves that are removed by hand after each six or more stampings have been trimmed.

This new setup has increased production from 250 to 285 pieces per hour over the prior method. Lower maintenance and less downtime on transfer devices are also realized. Safety is improved since no manual handling is involved in the transfer of the blanks and there are no hazards in the transfer area.

Higher production and improved safety are also attained by a device for loading large blanks into a die which performs a drawing operation on hoods. Prior to installation of this loader, blanks were manually placed by two men because of the size and weight of the blank. This former handling method often resulted in scratching the sheet, requiring extra finishing costs.

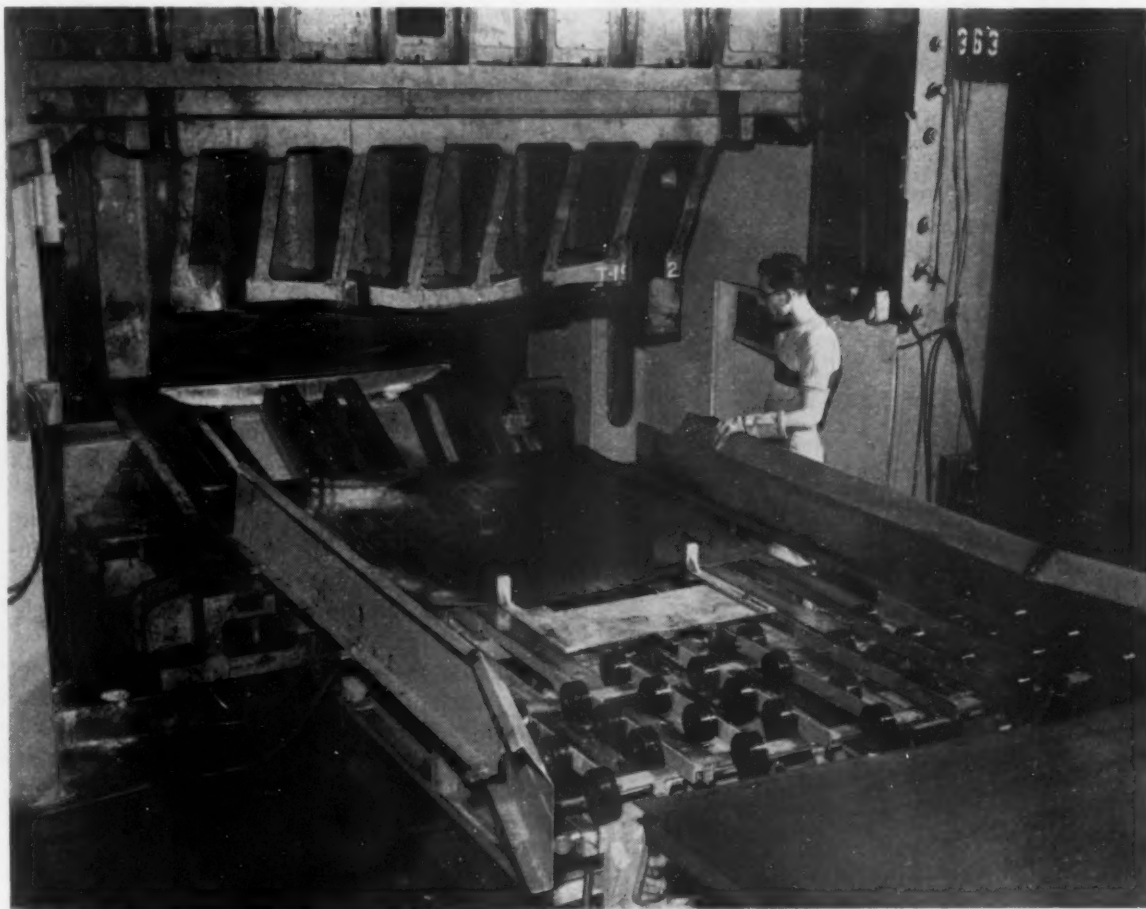
Blanks are now stacked on a table in front of the loader and are started by an operator, who uses a suction cup to push the blank onto inclined idler rollers. The blank advances until it strikes stop pins just outside the die. As soon as

the prior blank is drawn and removed from the die, the press operator depresses a pushbutton that retracts the stop pins. This causes an air plunger below the roller to actuate a chain attached to a carriage having upward projections. These projections engage the trailing edge of the blank and push the blank into the die.

The blank then moves up inclined guide rails beside the die. At the end of its stroke, the carriage retracts and the blank slips back slightly until its trailing edge contacts stop pins which locate the blank longitudinally. At this point, spray guns automatically open for a moment and apply draw compound to the blank. Then the operator trips the press, causing the die to close. Below the die are taper pins that contract the edges of the sheet and position it transversely just before the draw starts.

Carriage advances blank

Operation of the carriage that advances the blank is controlled by a relay and ratchet device that will reverse the carriage if the control button is pressed a second time. The advance therefore can be halted at any point in the stroke if desired. Aside from the operator who starts the sheet onto the loader, only one man is needed to operate the press by pushbuttons. Since both men work well away from the press ram, safety is at a maximum.



CARRIAGE, operated by a chain and air plunger, pushes hood blanks into the draw die.



GOUGING operation being performed here on 18-ft section is normally done in one pass.

On contoured plates—

Welding Without Prebeveling Lowers Fabricating Costs

By R. C. Hermon, Shop Superintendent, Structural Div., Pacific Car & Foundry Co., Seattle

- ◆ New fabricating methods developed at Pacific Car & Foundry Co. eliminate the need for prebeveling on most jobs involving contours and shapes . . . Procedures center around the use of a compact electric arc and compressed air torch for cutting and gouging metals . . . Torches work with equal efficiency on mild steel, stainless alloys and clad metals.
- ◆ Plates to be welded are square-butted together and held on the underside with a light sealing bead or tack welds . . . The joint is then gouged in one pass forming a neat groove about $\frac{1}{2}$ in. in depth and width . . . Welding is normally done in two passes . . . Low cost, carbon-graphite electrodes are used for gouging.
- ◆ SPECIAL procedures for welding metal plates without prebeveling are cutting fabricating costs at the Seattle, Wash., plant of Pacific Car & Foundry Co.'s Structural Steel Div. Methods employed center around the use of a compact electric arc and compressed air torch. These torches are effective in remov-

ing defects in welds and castings, scarfing, gouging, removing excess metal cutting and grooving.

Advantages of the Arcair gouging and cutting torch are its applicability to all metals and alloys, and low operating cost. It will work with equal efficiency on stainless steel alloys and clad metals as well as on mild steel, using inexpensive carbon-graphite electrodes. Metal electrodes for work on copper and various special alloys permit the one tool to be used in all types of fabrication.

Pacific Car first used the method for removing welds in 2 and 3-in. mild steel plate. Specifications on a large fabrication job required 100-pct penetration, with X-ray inspection of every weld. Deficient welds were formerly removed either by chipping or oxyacetylene gouging. The Arcair torch on this particular job was more efficient than the previous methods.

As a result, the process was adopted, using a back-step gouging technique for thicker plates.

Back-step gouging has the advantages of being faster and cheaper than chipping or conventional flame-gouging. Also, it completely removes slag from the groove and leaves cracks

and defects clearly visible during gouging. The width and depth of the groove could be controlled to close tolerance with a considerable reduction of residual heat.

Early experience with the process led to the establishment of new metal fabrication procedures. Most welding jobs involving contours and shapes are no longer prebeveled. Square-edged plates are butted together and held on the underside with a light sealing weld or tack welded. The joint is then gouged in one pass, forming a neat groove approximately $\frac{1}{2}$ in. in depth and $\frac{1}{2}$ in. in width. If required, subsequent passes with the torch will form a groove of any desired depth or width.

Advantage in not beveling

The only remaining operation is to fill the groove with weld metal, normally accomplished in two passes. Grinding is sometimes necessary before the groove can be welded, depending upon the type of metal, welding rod and specifications.

Part of the fabricating work being done by Pacific Car for a power project on the Columbia River involves the welding of square-butted plates without prebeveling. About 18 ft long, these sections will form the guides for the intake bulkheads on the main intake units supplying the powerhouse. The plate is first cut to length, formed on a press brake and then welded to a large mild steel I beam base.

Two stainless-clad plate sections to be welded are first square-butted against one another and tacked in position on the mild steel underside with short fillet welds.

Because of a $1\frac{1}{2}$ -in. bend in the length of the plates there is a distinct advantage in not beveling the plates prior to welding. To bevel both plates around this curve would have been extremely difficult, especially when working with a hard stainless-clad surface.

Gouging is done after the plates are in position. Accurate control possible with the torch permits interruptions without creating any difficulties in matching up the continued groove. Spatter is removed from the finished groove with a slag hammer.

Use coated electrode

Since the plates were stainless-clad mild steel, the first weld pass was made with mild steel rod; the second and final weld pass was made with stainless steel rod. Grinding is the last step in the process.

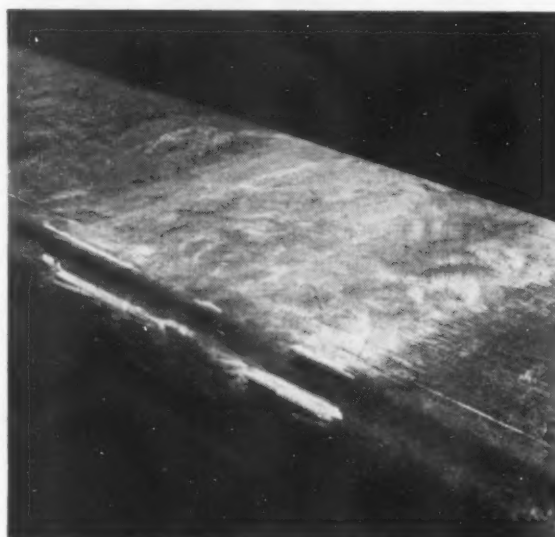
For gouging, a $\frac{1}{4}$ -in. coated carbon-graphite electrode was used. About 275 to 300 amps DC reversed polarity was supplied by a Lincoln welding machine. Compressed air at 100 to 125 psi was supplied from the plant's central air compressor. Lincoln Jet-1 mild steel rod was used for the first weld and Reid-Avery 25-20 stainless steel rod for the final weld.



FINISHED groove is shown above after the spatter has been removed with slag hammer.



FINAL stainless steel weld. First filling weld was mild steel. Two welds were needed.



BEVELING both plates around this curve shown on the completed job would have been difficult.

Use special cans—

Cut Cupola Charge Costs

By W. M. Halliday, Consultant, Southport, England

- ♦ Fine metal particles from machining, grinding and press operations can be used successfully in the cupola charge . . . But special handling is required to keep metal from being lost in the cupola blast and to minimize oxidation.
- ♦ Economical sheetmetal cans of special design have been used to keep fine particles packed closely together . . . Containers assure that melting of fine scrap will take place at the proper stack height . . . Oxidation problems are simplified.

♦ **SUCCESSFUL REMELTING** of machine shop swarf and small foundry scrap permits economies in the cupola charge and improved quality in castings. Successful use of metal of very fine particle size depends on the ability to handle these small pieces correctly in the cupola. Their use may be facilitated by loading the pieces in specially designed metal containers.

In addition to coke, fluxes and special ferroalloys, most cupola charges comprise carefully blended proportions of virgin pig iron, cast-iron scrap, and often a certain percentage of steel scrap. Cast-iron scrap is usually derived from normal foundry scrap returns, and machinings.

Regulated use of such scrap in the cupola mix can have a beneficial effect upon the quality of castings. Repeated remelting of the scrap metal results in a refined internal structure. There is a better distribution of carbon content and reduction of graphite-flake size. An adequate proportion of such scrap melt helps neutralize the coarser grain structure of the softer blast furnace irons. This in turn reduces the tendency for such coarse grain structures to be reproduced in finished castings.

Steel scrap is increasingly used with cupola charges in making high-duty cast irons. Chief influence is to reduce the carbon, silicon and

phosphorous contents in the resulting mix. Such reductions occur by simple dilution according to the weight of steel scrap used. Total carbon content, however, is rarely reduced to the average carbon content of all metal in the whole cupola charge because of carbon absorption from the coke.

Under normal cupola conditions steel absorbs little carbon until it has descended into the melting zone proper of the cupola. At this point it melts and picks up carbon freely because of the prevailing high temperature of that region. Molten droplets of steel have to fall gradually through incandescent coke layers of the furnace bed, and in so doing pick up additional carbon, depending upon the speed with which they pass through the coke.

Thus, carbon content in the total mix will depend not only upon the amount of steel scrap used, but mainly upon the length of time the molten steel is in contact with the coke.

Steel scrap of very small particle size, such as finely broken cuttings or minute press punchings are not well suited for cupola remelting. They can be used, however, if loaded in a suitable container which will keep the particles packed closely together until they reach the melting region in the cupola.

The best forms of steel scrap to be used are

ts With Fine Metal Scrap

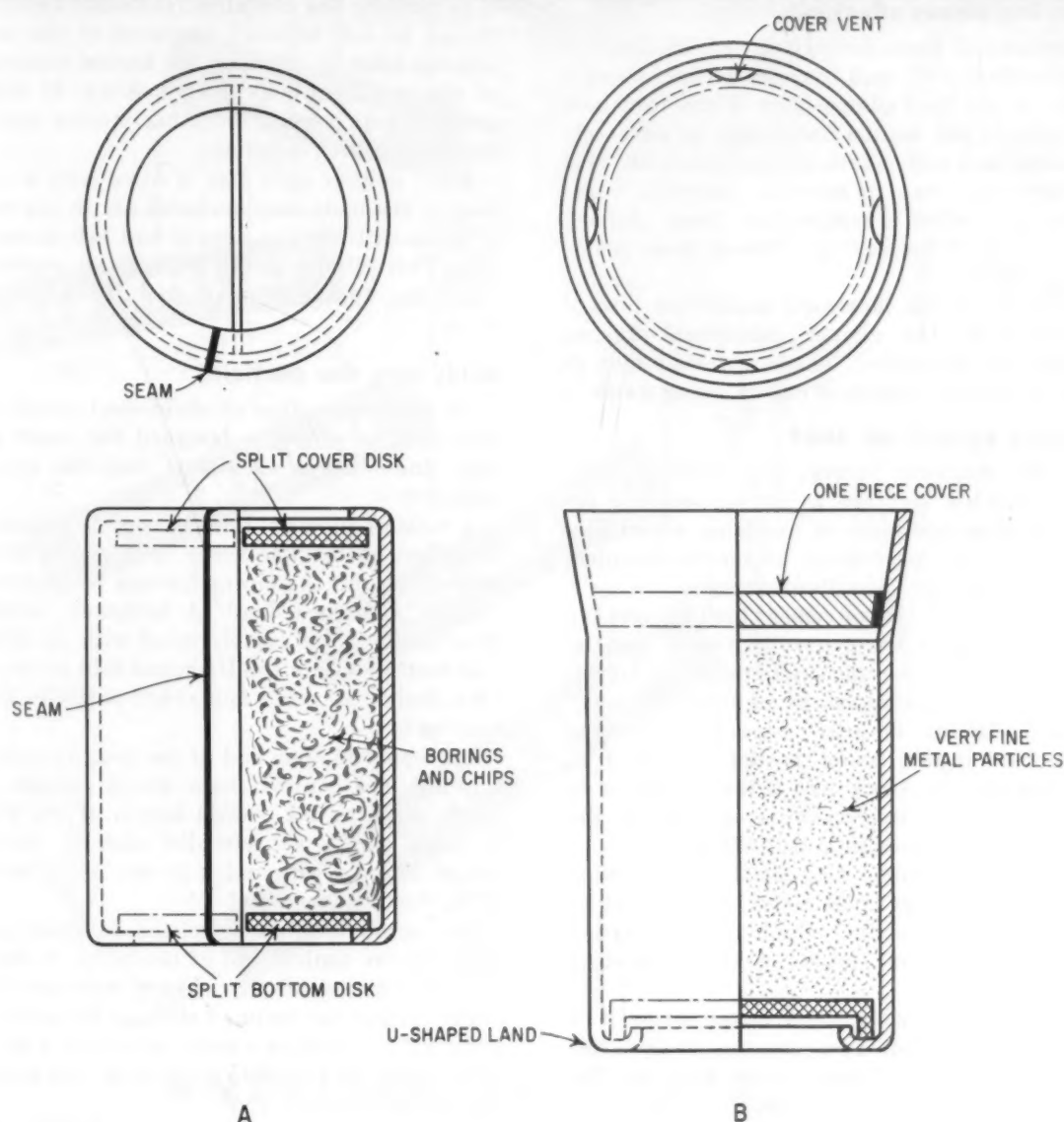
long curled turning chips of heavy cross-section; plate shearings, odd random lengths of angle or channel irons, parts of girders and beams, fish plates, rail ends and similar materials.

Steel scrap having a known high alloy content, such as nickel, or some similar hardening alloys employed to produce specially hard cut-

ting materials, should never be used for cupola remelts.

With both cast iron and steel scrap the size of parts and the total weight of such scrap content with any particular mix must always be carefully watched when making up the cupola charge.

Use of cast iron or steel borings, grindings,



SHEETMETAL DRUMS with welded seams are easily fabricated. Container at left holds bor-

ings and chips, has split cover and bottom. For finer particles use container shown at right.

"Containers are safe and easy to handle . . . They allow melting to occur at the best location . . ."

small size cuttings or chips will be undesirable unless they can be either compressed economically by briquetting or loaded into a container.

Successful use of either of these methods, however, depends upon overcoming several practical problems. Where fine borings are loaded loosely into the cupolas, the air blast blowing up the furnace will force out many of the smallest particles and result in very high material losses. When fine cast-iron borings are dispersed through the cupola mix by the air blast, oxidation is heavily increased, and a considerable loss of carbon, silicon and manganese results.

How fine pieces affect mix

Because of these factors use of fine borings and cuttings will tend to cause serious fluctuations in the final composition of the iron mix. Fluidity of the molten metal may be adversely affected, and will usually be very sluggish. This in turn will lead to misruns, porosity, blowholes and other irregularities. Such defects may outweigh the savings effected from use of scrap metal.

Because of the increased tendencies toward oxidation of the charge, additional fluxing agents will be needed. These materials may in turn accelerate erosion of cupola lining walls.

Protects against air blast

If fine machine borings and swarf of very small particle size are to be successfully remelted, a method must be available which permits the scrap material to be readily handled, and overcomes process disadvantages.

Use of a moist clay or cement binding agent to make a briquette has generally proved unsatisfactory. Briquetting usually requires an investment in press equipment. In addition, the many metal particles in such pressure-compacted briquettes expand when heated and tend to disintegrate the block and allow particles to disperse widely into coke layers before the block reaches the critical melting region.

A more economical and satisfactory method of handling these small metal particles is to pack them in a container which gives protection against the air blast and is capable of arresting oxidation.

For this purpose a sheet metal canister or drum may be used. Two superior designs for such containers are shown in the drawing. The first, A, shows a container specifically designed for holding scrap composed of medium size, or even having a few large particles such as cast iron or steel borings and chips. A hollow cylinder is rolled from steel sheet and welded or lapped-seamed along one side.

The cylinder is open at each end, with portions bent inward around the periphery to form 1/2-in. projecting ledges at right angles to the outside walls.

A thin sheet steel circular disk fits loosely in the container and rests on the ledge. Disk thickness is about twice the wall thickness of the body. This disk is cut in two equal parts across the diameters to enable the halves to be readily inserted in the cylinder before loading. A similar split disk is used to close the container.

Leave room for clearance

The fine cuttings are packed to a height which permits closing disk halves to be admitted easily. There is a clearance of about 1/4 in. between the top of those members resting on the scrap material and the underside of formed ledge.

In packing the container, sufficient clearance should be left between the level of the scrap and the ledge to allow for the normal expansion of the scrap contents upon heating. If this is not followed, serious bursting strains may be imposed on the container.

Since neither split disk is fitted with a tight seal in the body, any occluded air in the mass of scrap cuttings has a ready and safe means of exit. This eliminates all risk of an explosion when the container is heated in the cupola stack.

Holds very fine particles

An alternative type of sheet-steel swarf container, B, is specially designed for swarf and very fine borings of almost dust-like consistency.

A rolled hollow cylindrical body is formed as described above. The lower open end is folded inward around the circumference to produce a shallow U-shaped land. A hollowed circular sheet steel disk is loosely fitted with its dished side resting within the U-shaped fold as shown. This design prevents fine swarf particles from seeping out.

The opposite open end of the body is pressed outward in a conical shape which extends for about one fifth the overall length of the body. A thick sheet-steel circular disk is located within this conical portion to rest upon the top of the massed fine swarf.

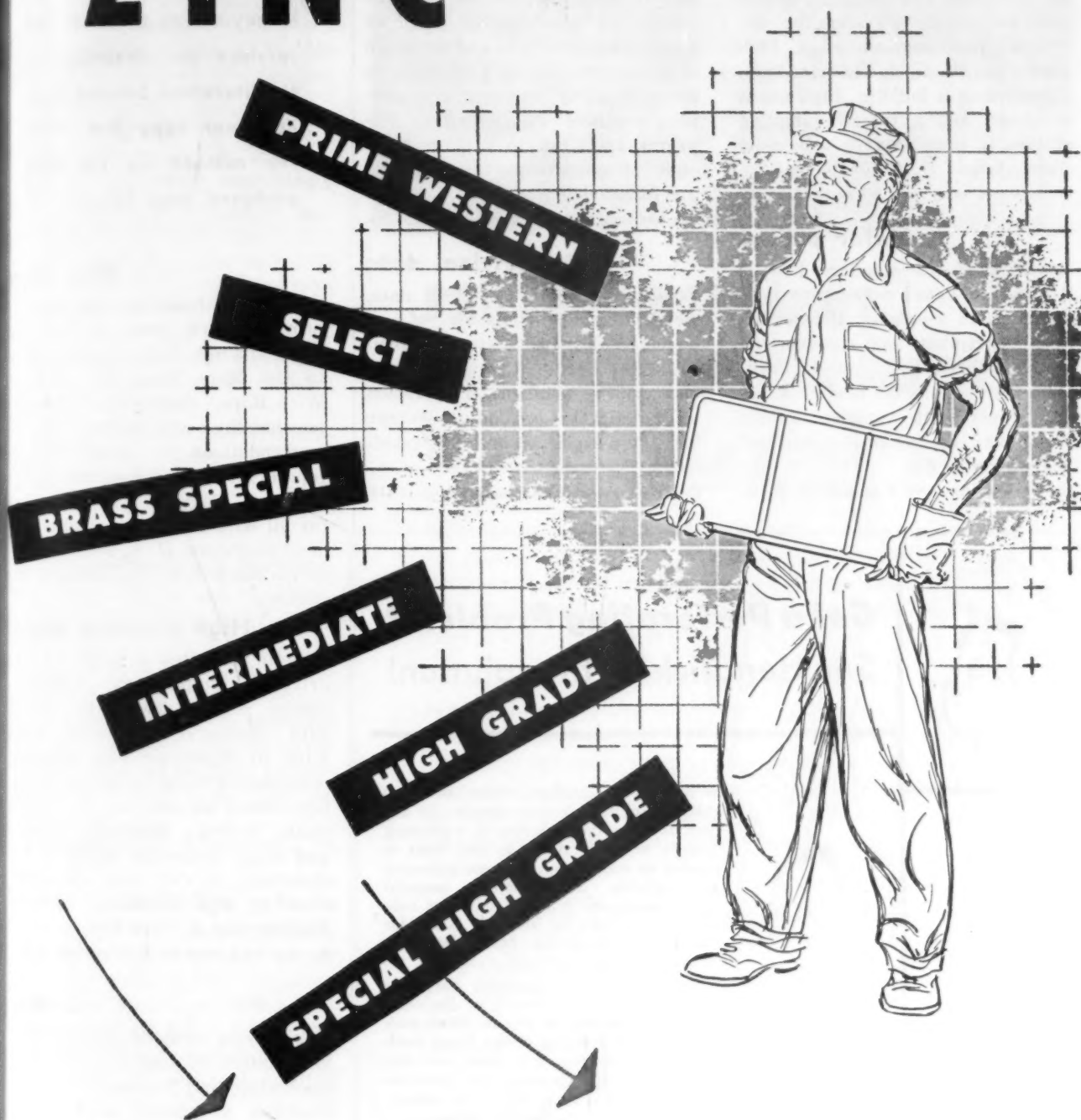
The scrap level is permitted to reach partially up the conical end of the body. It should then be rammed down by the top disk until this binds against the inclined sides of the cone. To allow air or moisture-vapors to escape, a series of very shallow but wide notches are cut around the periphery of the disk.

These containers are easy and safe to handle. They allow melting to occur at the critically low height in the cupola stack, while the resultant quality of the mix is good, because of the restriction upon oxidation.

SLAB ZINC

every grade of ZINC

for urgent military and
civilian requirements



AMERICAN ZINC SALES COMPANY

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AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O. Chicago St. Louis New York

August 26, 1954

New Technical Literature:

High purity gases

An accurate and reliable instrument and sampling system for continuous measurement of a high purity gas stream is illustrated and described in a bulletin. Instrument is shown and a typical sampling system is presented in schematic form. *Arnold O. Beckman, Inc.*

For free copy circle No. 1 on postcard, p. 115.

Motor pulleys

Redesign of the standard line of Reeves vari-speed motor pulleys is described in a catalog. Booklet offers description and construction details, lubrication, controls available, instructions on how to select the proper unit, complete rating tables and dimensional diagrams. *Reeves Pulley Co.*

For free copy circle No. 2 on postcard, p. 115.

Mud hog crushers

Jeffrey mud hog crushers are designed for crushing all types of wet, sticky materials, and when fed at a uniform rate in proportion to their capacity ratings, are non-plug crushers. Booklet offers diagrams and text to explain principle of operations. Specifications are included. *Jeffrey Mfg. Co.*

For free copy circle No. 3 on postcard, p. 115.

Electrical data

Booklet provides electrical data, weights and dimensions of all standard Edison battery assemblies and the "MC"-type storage battery. The principle of operation of the nickel-iron-alkaline storage battery is explained and illustrated. *Home Testing Institute.*

For free copy circle No. 4 on postcard, p. 115.

Catalogs & Bulletins

FOR YOUR COPY

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 115.

Wire rope

Seventeen life-saving tips for improving wire rope service are given in a new folder entitled "How to Get More Work Out of Your Wire Rope." Suggestions for correct handling and storing, and recommendations for proper use of rope are included. Reading matter is brief. Folder is recommended for all wire rope users and equipment operators. *H. K. Porter Co.*

For free copy circle No. 5 on postcard, p. 115.

High pressure pump

Bulletin describes a series of air-driven, high-pressure, hydraulic pumps. Eight models are listed with discharge pressures from 1,100 to 33,500 psi and describes operation of units in high-pressure, low-volume service such as hydrostatic testing, hydraulic presses and other hydraulic machines for clamping, riveting, crimping, shearing and punching. *Sprague Engineering & Sales Corp.*

For free copy circle No. 6 on postcard, p. 115.

Ledloy

Engineering memorandum contains information on Ledloy-A, the free machining, lead bearing steel which machines at speeds much faster than those used for common screw stocks. Memo discusses advantages and includes information on analysis comparison, typical mechanical properties and machining comparisons. *Peter A. Frasse & Co., Inc.*

For free copy circle No. 7 on postcard, p. 115.

MASONITE?
METALS?
PLASTIC?
RUBBERS?



Got a Perforating Problem? See Hendrick for the solution!



Sometimes the quickest, surest answer to design problems is very simple. In numerous cases, the inclusion of a pleasing pattern of perforations is just what is needed to make products more attractive and saleable. And whatever material you're using—be it metal, masonite, rubber, plastic, hard or insulated board for decorative display or fabricating purposes, Hendrick can help you.

For many years Hendrick has been building up the largest stock of dies commercially available. If you are faced with the need for bringing newer, more modern design elements into your products, Hendrick's long experience and perforating facilities can be yours for the asking. Write for more information, today.

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Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids

Hydraulic equipment

New catalogue gives latest information on three new items: Multi-Range flow control valve; direct operating pressure controls and pilot operated check valves. Detailed engineering data are provided on the direct operating pressure controls for pressures up to 2000 psi. Types of control are tabulated for various applications of the valve. Flow control valve construction is shown and operation of the adjustable orifice is diagrammed. *The Denison Engineering Co.*

For free copy circle No. 8 on postcard, p. 115.

Creep machines

Five types of creep testing machines for standard sized metal specimens are presented in a bulletin. The lever arm and screw type creep machines, Microformer type and new SR-4 type automatic relaxation machines, and a constant strain rate machine are included in the bulletin with pictures, dimensional diagrams and specifications. *Baldwin - Lima - Hamilton Corp.*

For free copy circle No. 9 on postcard, p. 115.

Gas carburizing furnace

Data sheet explains and illustrates a new gas carburizing furnace with push-button control, automatic quenching cycle and positive control of temperature and atmosphere uniformity. It eliminates expensive salt pot cyaniding, pack carburizing and improves ordinary furnace hardening processes. *Sunbeam Corp.*

For free copy circle No. 10 on postcard, p. 115.

Grinding wheels

Booklet contains typical application photographs, tables of grinding wheel sizes, prices, operating speeds and other data on the reinforced resinoid line of grinding wheels. Wheels discussed in booklet are Norton's BN type straight cutting off wheels for removing gates and risers, BD type hub wheel for weld grinding, cleaning castings, BFR type reinforced hub wheel for work requiring flexibility for removing mold marks on castings, etc. *Norton Co.*

For free copy circle No. 11 on postcard, p. 115.

Turn Page



PRICED FOR ECONOMY...


BUILT FOR RELIABLE SERVICE

Series "D" *'Load Lifter'*® Cranes

Never before has so much value been engineered into a crane at the low prices of the Series "D" All-Electric 'Load Lifter' Cranes. They are standardized and mass-produced for average industrial service, yet every type and capacity has design and construction features like those built into all "Shaw-Box" Heavy-Duty Cranes.

The dependable performance of Series "D" 'Load Lifter' Cranes will be remembered long after the price is forgotten. Three-girder bridge construction assures rigidity that prevents whipping and skewing. The bridge and trolley wheel axles rotate on anti-friction bearings. Every bearing is a ball or roller bearing. All gearing operates in oil in sealed housings. The motor and drive shaft are permanently aligned. Man, load and crane are completely protected by safety devices.

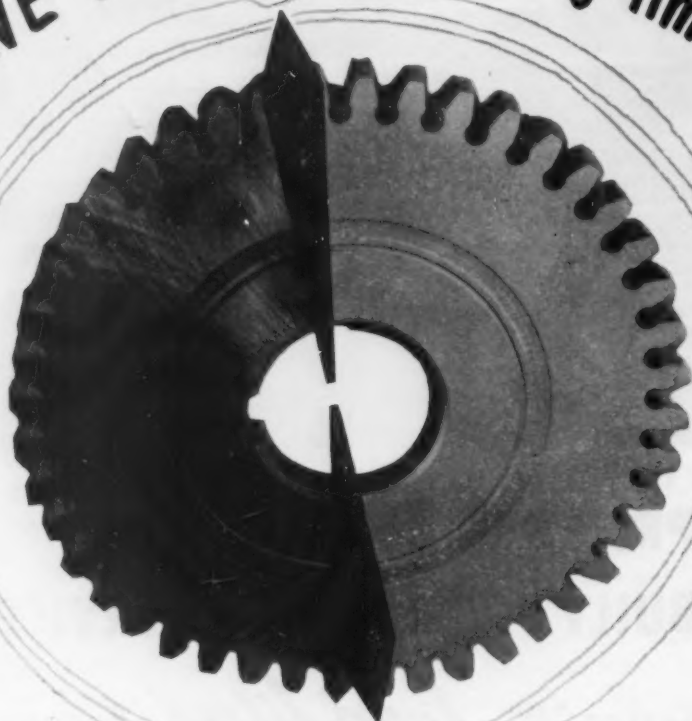
You can be sure of economical operation, minimum maintenance, and dependable everyday service when you invest in a Series "D" 'Load Lifter' Crane. Capacities range from 1 to 20 tons. Three basic types and three trolley styles available. Floor-operated and cage-controlled models. Selection is easy. Write for Catalog 221, then choose the capacity, type and style to meet your needs.



'Load Lifter'® CRANES

MANNING, MAXWELL & MOORE, INC. Muskegon, Michigan
Builders of "Shaw-Box" and 'Load Lifter' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, 'American' Industrial Instruments, and Aircraft Products.

SAVE HOURS in finishing time



with LIQUAMATTE wet blasting

Tools, dies, molds, engine parts, etc., requiring 1 to 6 hours to finish by hand methods are now finished in from 30 seconds to 10 minutes in a Liquamatte Wet Blasting Machine. It produces finishes mechanically at high speeds that previously have been impossible to achieve except by hand methods.

For example, at the Oling Tool Company a Liquamatte is saving an average of 50% on former time and labor requirements for surfacing tools prior to plating. On some items, such as drill bits, savings as high as 80% have been effected.

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bulletins
tell
how

send for these bulletins today



Save Time on
Tools, Dies, Molds.
Bulletin 43



Save Time on
Glass Molds.
Bulletin 53



Save Time on.
Plastic Molds.
Bulletin 63

American LIQUAMATTE
WHEELABRATOR & EQUIPMENT CORP. WET BLASTING

510 S. BYRKIT ST., MISHAWAKA, INDIANA

FREE TECHNICAL LITERATURE

Dust control

Two bulletins on Roto-Clone dust control are available. One on the type N roto-clone, hydro-static precipitator, in which the cleaning action is obtained with an inverted S-shape water curtain. Operating principle, arrangement and capacities, dust control systems and advantages are discussed. The second bulletin discusses Type D Roto-Clone as applied to metal grinding, metal finishing, etc.; Type W Roto-Clone applied to foundry shake-out, sand conditioning, foundry cleaning rooms and electric furnaces. Type F Roto-Clone is discussed as applied to stacks, gases and die sinkings. *American Air Filter Co., Inc.*

For free copy circle No. 12 on postcard, p. 115.

Vapor degreasing

"Vapor Degreasing Do's and Don'ts," manual showing proper degreaser operating methods, treats the subject with brief text and a profusion of illustrations. Literature covers every phase of metal cleaning through vapor degreasing, including safety, personnel, correct layout and maintenance of equipment, efficient operations, drainage, machines and chemicals. *Manufacturers Processing Co.*

For free copy circle No. 13 on postcard, p. 115.

Vacuums

Booklet releases information on the Spencer Vacuum. It lifts, sorts, removes and conveys and will handle metals, lints, liquids or gases. Vacuum can be carried to the job in pipes or on wheels, and used in off production periods to reduce health, fire and explosive hazards. More than 100 special applications, mostly heretofore unpublished, are contained in this book. It is claimed that the use of this vacuum will outmode tedious and laborious jobs now done by hand. *Spencer Turbine Co.*

For free copy circle No. 14 on postcard, p. 115.

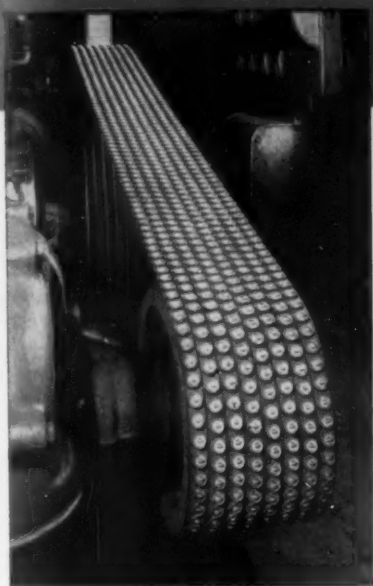
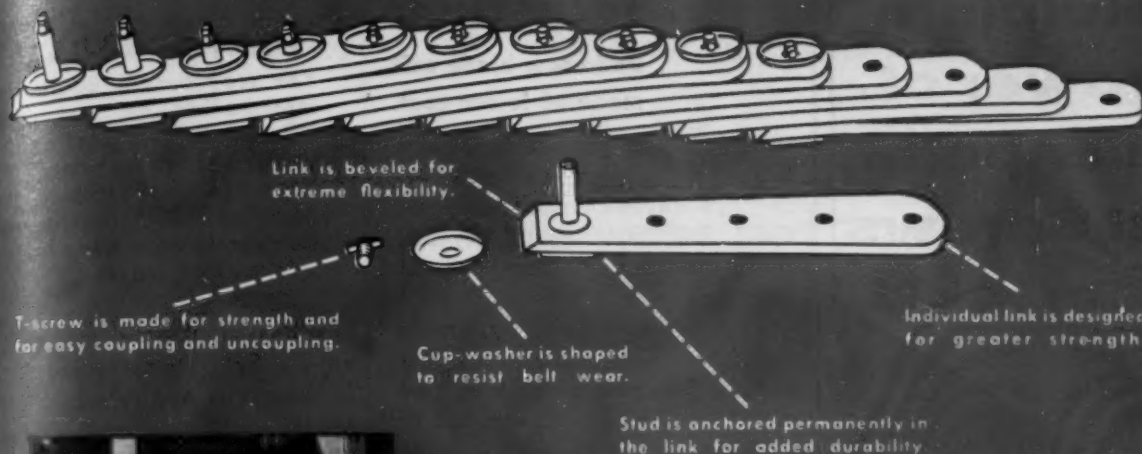
Materials handling

Catalog describes the principal products of Republic's Pressed Steel Division, including steel boxes, skids, pallets, foundry flasks and stampings. *Republic Steel Corp.*

For free copy circle No. 15 on postcard, p. 115.

Turn Page

This detailed line drawing of the new, patented Veelos TD and TE v-belt makes it easy to see how this new v-belt is designed to do a better job... easier!



New VEELOS

TD and TE Adjustable V-belt

So easy to couple it installs in minutes

So strong and durable it lasts for years

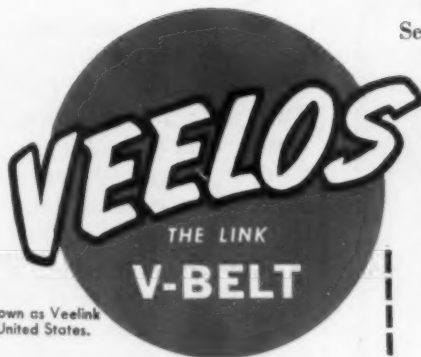
The new Veelos TD and TE adjustable v-belt is the successful development of a specific v-belt designed for a specific service—D and E drives.

This new Veelos TD and TE v-belt has these basic advantages...

It simplifies installation. Links are quickly joined by easy-to-use cup-washers and T-screws to make up individual belts. It's the easiest v-belt to couple and uncouple ever developed. And you don't need to waste time removing outboard bearings.

It lasts longer—is more flexible. New high-tensile strength link combined with new stud, cup-washer, and T-screw gives added durability. New link construction provides maximum flexibility for cooler, wear-resistant running.

Get the complete story of this great new v-belt for D and E drives. Send coupon now for new 8-page illustrated catalog.



Veelos is known as Veelink outside the United States.

MANHEIM MANUFACTURING & BELTING CO.
653 Manbel St., Manheim, Pa.

Please send copy of your new Veelos TD and TE v-belt catalog.

Name
Company.....
Address



ADJUSTABLE TO ANY LENGTH • ADAPTABLE TO ANY DRIVE

August 26, 1954

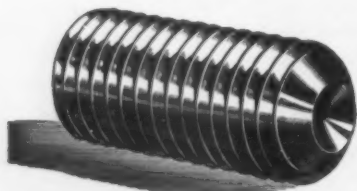
The Shaft Shows the Holding Power of Allenpoint Set Screws



Loosen a set screw and look at the shaft it's pressing against. The set screw must make a full circle impression with no rough edges in order to give maximum holding power.

Allenpoint Set Screws drive smoothly and deeply into the shaft. Their even bearing surface gives increased resistance to rotation and sliding motion. Even on shafts of small diameter, Allen's smaller cup point assures top holding power.

Sold only through leading
Industrial Distributors—specify Genuine
Allenpoint Set Screws



TECHNICAL BRIEFS

Diecasting:

Dado saw blade unit made at lower cost.

By designing the hub flange of a dado saw blade unit as 3 zinc die-castings Magna Corp., Menlo Park, Calif., has improved quality and reduced manufacturing cost of this item.

The hub flange assembly is made up of two eccentric rings and a small drive pinion, each a zinc diecasting. The pinion, cored to fit an Allen wrench, is staked in place in a cavity in one of the rings. It mates with integrally cast gear teeth in the other ring. Pinion rotation changes the position of the eccentric rings to offset the blade and determine the width of cut.

No Machining Needed

The advantage of any die-cast gear is that each gear from a given die cavity is a substantial duplicate of every other gear from the same cavity over a given run. With the lower melting zinc alloys, die wear is seldom significant even after a long run.

Generally die-cast gears are used where loads are light to moderately heavy. In this application, the load is extremely light and intermittent in nature.

Calibrations Are Accurate

Exceptional accuracy in service is achieved by fixing the calibration marks during the diecasting operation. The debossed letters and calibrations are produced by hobbing the die.

These impressions are debossed



Markings are accurate . . .

WANT MORE DATA?

You may secure additional information on any item briefed in this section by using the reply card on page 115. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

on the hob, giving raised letters in the cavity and debossed letters on the casting. Standard dimensional accuracy of 0.001 in. per in. insures precise location of the calibration marks on the eccentric rings.

Carbides:

Surfacing method downs time in wire mill.

Downtime has been reduced and an improved product has been gained at the Nixdorf-Krein Mfg. Co., St. Louis, by coating wire forming machine rolls with tungsten carbide. The material is applied by the flame plating process.

By flame plating these rollers with hard, wear-resistant tungsten carbide, small and large wires can now be processed in succession without scoring the stock or replacing rollers. Downtime costs are at a minimum and a better product is produced. The tungsten carbide coating is left in as-coated condition to obtain an effective gripping surface which produces the rotation necessary to avoid excessive wear.

The process was developed by the Linde Air Products Co., a Div. of Union Carbide and Carbon Corp. The coating may be applied to most common metals and can be used in as-coated condition, 125 microinches rms, or finished down to 1-5 microinches rms.

Because the temperature of the part being plated does not exceed 400° F, the chance of distortion in the base metal is eliminated. For this reason, the process is well

suited for use on finished or semi-finished parts. Many parts and tools such as plug and ring gages, gripping dogs, turbine shaft seals, spindles, and bearings are currently being Flame-Plated with outstanding success.

Identification:

**Press forms and numbers
part in one operation**

Impressing identification numbers on parts while they are being formed on a Hydropress is expected to save The Temco Corp., Dallas, Texas at least \$1,000 in the next year. In addition, it gives a better impression.

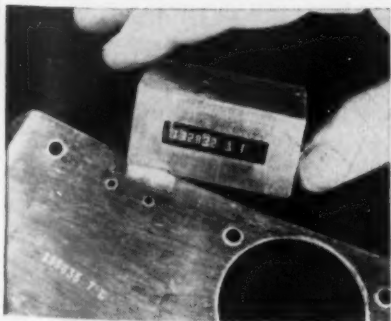
Metal type is held in a steel block, 1 x 2 in. in size. The press operator places the block on the flat part which is to be formed, with the exposed type faces against the part.

When the pad is brought down to form the part, it forces the stamping block against the part, inscribing the desired identification.

Easy to Set

The block itself is a 2-in. piece of 1 x 1-in. cold-rolled steel bar stock. A slot large enough to hold the proper number of steel stamps is milled through the center of the block. The slot is covered on the base of the block by a strip of 1/8-in. metal.

Type is secured or removed from the slot by tightening or loosening two set screws, drilled and tapped into both ends of the block. The type protrudes from the block just enough to stamp a clear impression on the part.



All parts match . . .



**unusual mass production
in metal . . .**

**keynotes your
contract manufacture by
BRANDT . . .**



Regardless of the size or scope, it's easier for Brandt—with room to spare—to meet your on-the-dot scheduling with precision workmanship.

FORMINGS STAMPINGS WELDMENTS
in any type of metal . . .



Call on Brandt's "big three" to help solve your mass production metalworking problems . . .

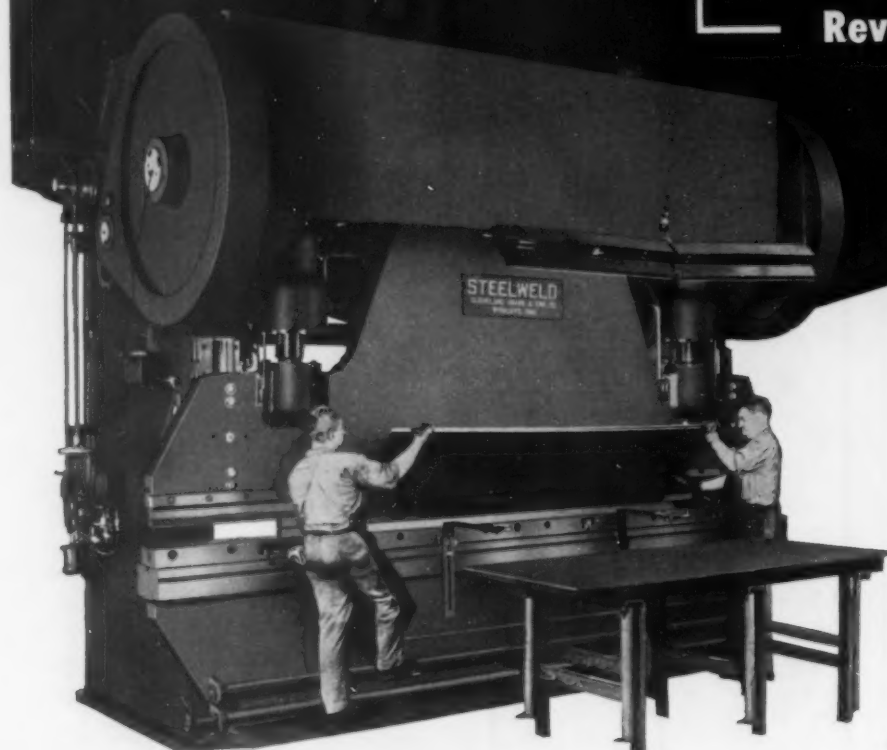


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BALTIMORE

CHARLES T. BRANDT, INC.
Baltimore 30, Md.

200,000 sq. ft. of flexible working facilities, serving the many diversified needs of industry and government. Brandt is located in the midst of major transportation facilities, close to steel mills and sources of other metal supply.

Reversing Ram Simplifies Press Operation



**Reversing
Ram
Drive**

**Standard
Ram
Drive**

Model MO 6-12. Handles plate to 16'-6" x 7/16". Other Steelwelds available for working plate to 24 feet and thicknesses to one inch.

With a reversing ram drive you can back the ram or upper die away from the work at any point in the stroke. It is not necessary for the ram to continue through in one direction as when only the normal press drive is provided.

This feature speeds locating the correct ram position to achieve a specified bend or shape. It saves time and spoilage when trying new dies.

Reversing ram machines have two complete drives, including motor, flywheel, clutch and brake. They are controlled by individual foot

pedals on two different shafts, located one above the other across the front of the press.

The reversing ram feature is optional and may be provided on any Steelweld Bending Press. It adds greatly to the ease of operation and because of time-savings it enables, rapidly absorbs the extra original cost.

Steelweld Bending Presses are such versatile tools with so many outstanding features that we urge you to learn all about them. As a starter, send for the catalog below.



GET THIS BOOK!

CATALOG No. 2010 gives construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.

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STEELWELD BENDING PRESSES

BRACING • FORMING • BLANKING • DRAWING • CORRUGATING • PUNCHING

NEW EQUIPMENT

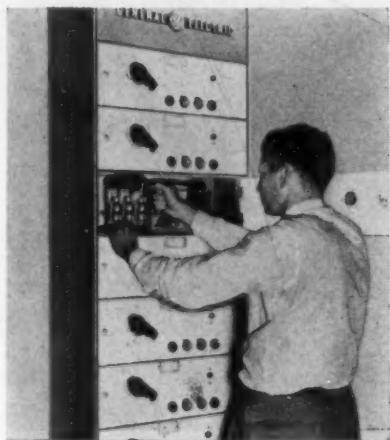
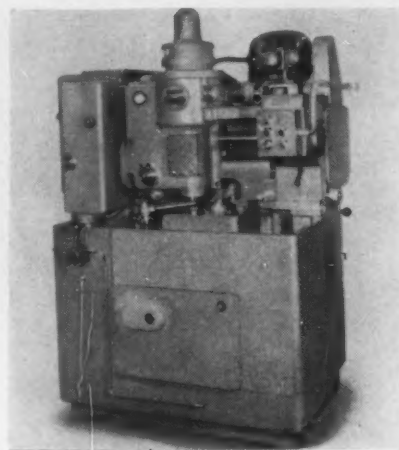
New and improved production ideas, equipment, services and methods described here offer production economies... for more data use the free postcard on page 115 or 116

Gear shaper has capacity of 6 in. pitch diameter

The new No. 4GS gear shaper has capacity of 6 in. pitch diameter and 2 in. face width for external and internal spur and helical gears. Maximum diametral pitch is $5/7$ for spur gears, and 6 for helicals. The machine uses a 4-in. pitch diameter cutter mounted on a $3\frac{3}{8}$ in. diam cutter-spindle which is reciprocated through a $2\frac{1}{2}$ in. rock-shaft driven from a crank-shaft. Cutter spindle speeds range from 98 to 635 strokes per min.

Rotary feed of cutter and work is governed by pick-off gears. Other features include an improved depth feed mechanism, an air operated saddle return, a cam trip mechanism to automatically accelerate the withdrawal of the cutter from the work when the last tooth has been cut, forced feed lubrication for all main operating parts, separate coolant pump and motor. *Fellows Gear Shaper Co.*

For more data circle No. 30 on postcard, p. 115.



Motor control centers are unusually compact in design

Known as DA7093, a new motor control center will save up to 50 pct in floor space. It will take nine NEMA size one starter units, or six NEMA size two units in the standard 90-in. trough without reduction in pull-box space. The starter units are either the fusible or circuit breaker types. New center busing arrangement frees pull-box space for wiring and increases vertical bus capacity from 300 to 600 amp. Separate insulator is fur-

nished for each bus. Pushbuttons are mounted on the unit door, and when pressed actuate the contacts by means of plunger-type extensions. For safety, a new method of grounding has been developed. Units which are mounted on the unit frame are inserted and withdrawn from the center in a drawer-like operation. Each standard section measures $13\frac{1}{2}$ in. deep x 24 in. wide. *General Electric Co.*

For more data circle No. 31 on postcard, p. 115.

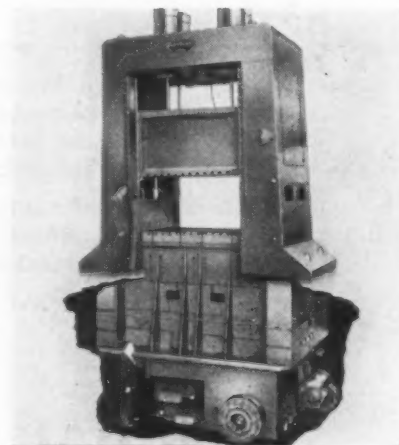
Huge press features underdrive type construction

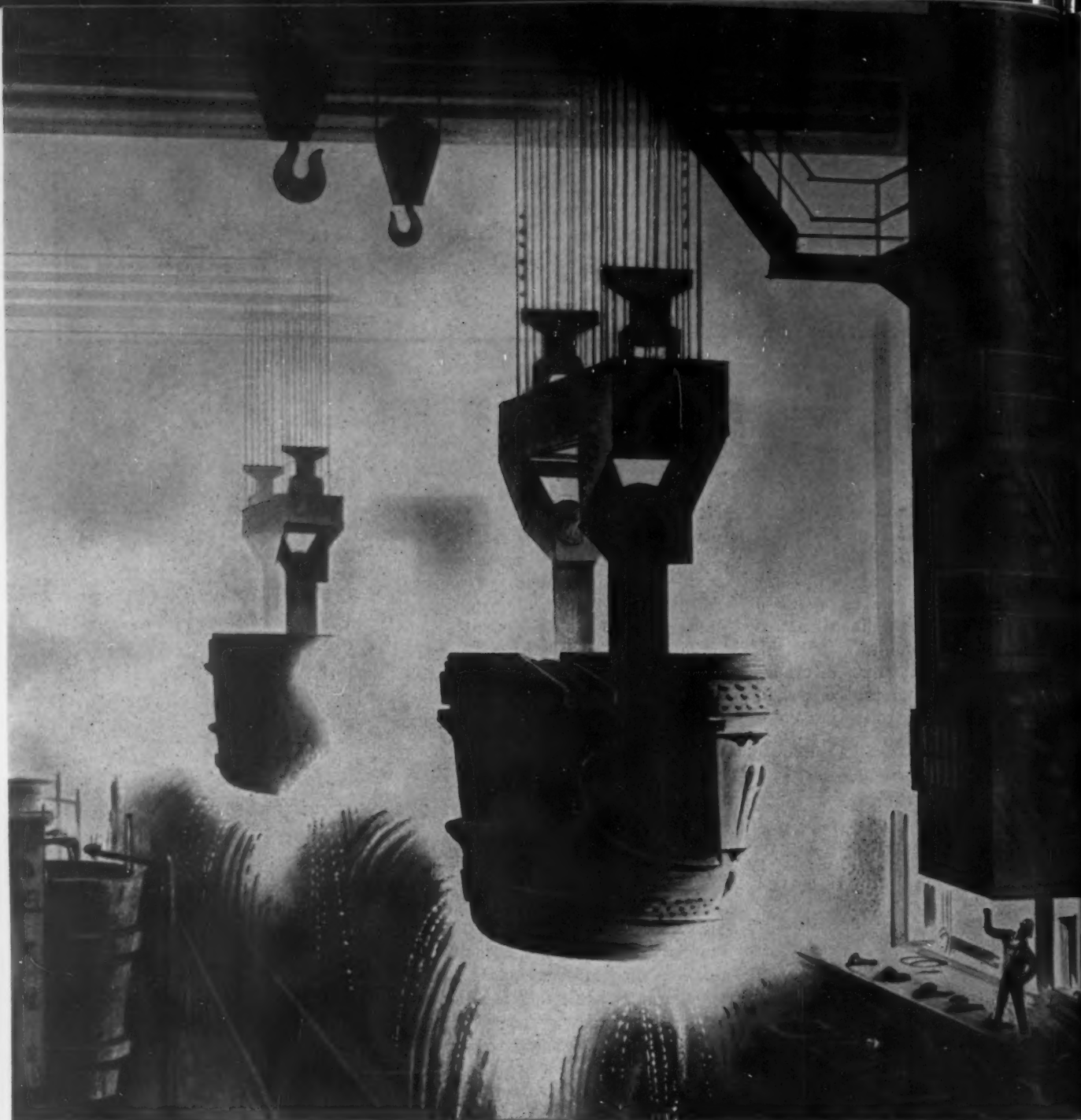
The Cleveland U4-450-84-60 four point underdrive press, double geared, twin drive, is arranged with air counter-balance to the slide and air brake on the fly-wheel, to bring it to a quick stop when the power is shut off. The press is equipped with a dynamic clutch and is arranged with pneumatic cushions in the bed. With underdrive construction, maintenance is easier and adjustments or repairs can be made at conveni-

ent floor level. This type press design minimizes press height on production floor, providing better lighting and more freedom of material flow. Press production area is cleaner and safer as all drive mechanism and attendant oil and grease are in a separate area. Press stroke is 20 in.; 60 x 80 in. slide and bed area; capacity, 450 tons. *Cleveland Punch & Shear Works Co.*

For more data circle No. 32 on postcard, p. 115.

Turn Page





MORGANIZATION...way to cut costs

They expected a minimum of 20 years of service from the special-purpose Morgan crane we built for their steel mill. Already this steel company has received 39 years of service, almost double the expected life...and the end is still nowhere in sight. And, of course, the yearly expected cost of operating the crane has been reduced.

This is a typical result of "Morganization"...surveying, designing, building, and installing with the experience and *extra care* that make Morgan cranes and rolling mills and special equipment *last a lot longer*...and that make Morgan equipment cost less over those added years.

Write for booklet A-8, which describes "Morganization" and Morgan equipment for heavy service.

MORGAN ENGINEERING

THE MORGAN ENGINEERING COMPANY, ALLIANCE, OHIO

Power

A power
nating
finishing
per 7-
moving
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by use
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with

Pla

New
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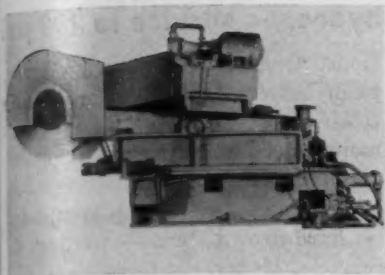
A

Automatic hot saw cuts two billets side by side

New automatic 48-in. combination cross-cut and drop saw capable of cutting two 7 x 7-in. billets side by side also features either vertical or horizontal blade feed. The saw is entirely hydraulic-operated, with special feedback controls to provide constant use of maximum horse-

power, regardless of varying thickness of the material being cut. When used as a cross saw, the blade lifts out of the hot zone and returns to initial position. Peripheral blade speed is over 20,000 fpm. *York-Gillespie Mfg. Co.*

For more data circle No. 33 on postcard, p. 115.

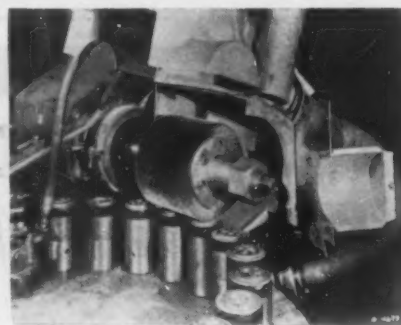


Power brushing setup finishes complex parts

A power brushing method is eliminating a production bottleneck by finishing 15,000 fuse components per 7-hr day. The problem of removing feather burrs and blending surface junctures after the fuse disks are machined was solved by use of power brushes. A Parker automatic machine was equipped with 24 rotating spindles. They

rotate at approximately 60 rpm and complete one revolution every 25 sec. Spindles do not rotate at loading station. An air jet lifts the finished part and blows it into a chute. Brush head is driven by 7½ hp motor with vari-drive operating at 3600 rpm. *Osborn Mfg. Co.*

For more data circle No. 34 on postcard, p. 115.

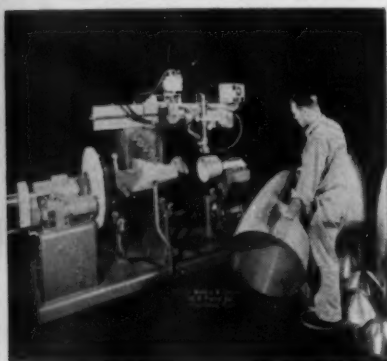


Welding round parts is simplified using new fixture

New full automatic circumferential expanding and welding fixture helps to solve the problem of sizing, holding and backing-up joints for proper welding. End pressure and expanding mandrels are incorporated in the machine to provide utmost alignment of abutting edges. Complete unfolding or swinging out of the way of fixture parts gives the operator unshackled

freedom in installing parts to be welded, keeping the loading and unloading cycles to a minimum and speeding production. Pressing one button on the control panel automatically sequences all operation. Individual control buttons start and stop or reverse any operation. Quick changeover is possible. *Air-line Welding & Engineering.*

For more data circle No. 35 on postcard, p. 115.

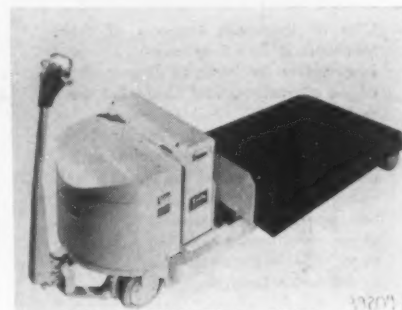


Platform lift truck transports 14,000-lb machines

New Hydroelectric platform lift truck was specially designed to carry heavy machines weighing up to 14,000 lb. To be used where floor conditions made it necessary that the truck axle loadings must not exceed 7200 lb, an overload warning signal was placed on the rear axle. The horn continues to

blow until the load is recentered and the right axle loading attained. Four wheels are used at the front of the truck—all drive wheels with a differential in each pair. Steering is similar to that of an automobile. Controls are in the handle grips. *Lift Trucks, Inc.*

For more data circle No. 36 on postcard, p. 115.



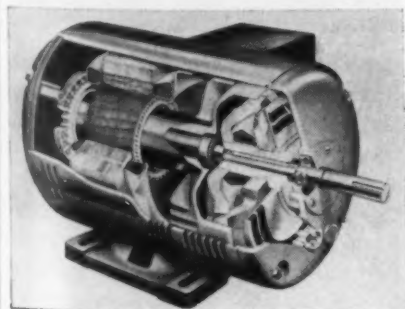
Integral power-speed control for fractional hp drives

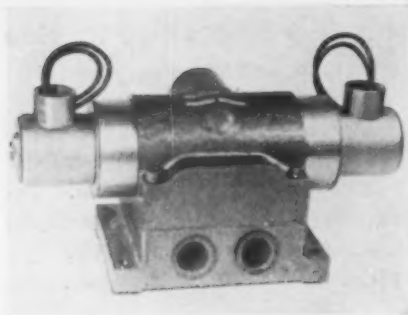
A line of combination power and speed control units are engineered to meet specific needs of fractional horsepower drives. Known as Adjusto-Spede Drives, the units are integral combination of AC constant speed induction motors, eddy-current couplings, and electronic speed controls. Under constant

torque or fan type load, the Adjusto-Spede Drive may be operated continuously at any speed within the limits of the speed range. Electronic control insures stability of ± 2 pct of top speed at any point within the range. *Eaton Mfg. Co.*

For more data circle No. 37 on postcard, p. 115.

Turn Page





Control valves for air or hydraulic service to 200 psi

Simplicity of design, versatility of application, and ease of installation and service feature the MV Series 4-way valves for air or hydraulic service. Only moving valve part is the one-piece spool. Standard MV valves are readily adapted to sub-base, manifold, panel, console or conventional piped installa-

tions. Operation can be by lever, palm button, foot pedal or treadle roller, cam, solenoid, pilot or remote bleeder button. Parts are standardized and interchangeable. Body and spool are aluminum, liner is hard-drawn brass—nothing to corrode. *Modernair Corp.*

For more data circle No. 38 on postcard, p. 115.

WEBB PLATE FABRICATING MACHINERY

Steelworkers ALL STEEL CONSTRUCTION

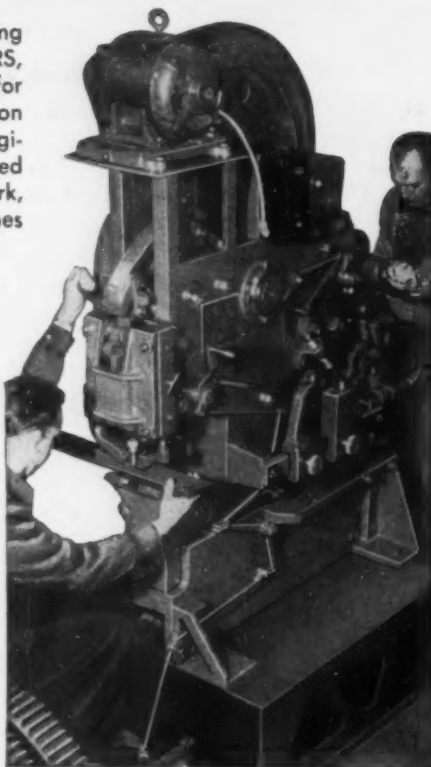
The Webb Corporation, in presenting the line of new WEBB STEELWORKERS, has designed versatile machines for either job-work or high production work. These units have been engineered to meet the particular need of shops having a variety of work, with a result that all-purpose machines are now available.

Five Complete Tools are Incorporated in a Single Unit.

1. Punch for plate, bars or structurals.
2. Cuts angles and tees with straight or miter cut.
3. Cuts off round and square bars.
4. Shears plates and bars.
5. Coping or notching attachment.

One of the main features of these machines is that they are at all times in complete readiness to do any of the above operations and to do the work well.

The punch may be operated at the same time as either the section cutter, bar cutter, shear or the coping and notching attachment . . . therefore, two operators can work at this machine simultaneously without interference. For illustrated literature and prices, write Dept. E.



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PYRAMID TYPE ROLL



INITIAL TYPE ROLL



STEELWORKERS

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THE WEBB CORP.

WEBB CITY, MO., U. S. A.

Nylon tumbling media

Nylaslugs, molded nylon tumbling media, are used in deburring and polishing fragile parts, such as injected molded plastics, small parts from zinc, brass or aluminum. The process used varies with the product but generally consists of using Nylaslugs with an abrasive of proper roughness. After thorough rinsing the Nylaslugs are used with a polishing cream, after which they are tumbled with clean hardwood sawdust. Various shapes and sizes of Nylaslugs are available. *Rampe Mfg. Co.*

For more data circle No. 39 on postcard, p. 115.

Chrome feeder bowls

In the parts feeding field a new line of hard chrome plated bowls for Peeco vibratory feeders permits predetermined surface structure to withstand tough abrasive parts and yet maintain top efficiency. The hard chrome surface will not wear smooth, retains its origi-



nal finish, keeping feeding operations at peak performance. Standard Peeco vibratory parts feeding bowls are made from cast aluminum alloys. Special bowls are available with cured rubber for handling fragile and delicate parts. *Perry Equipment & Engineering Co.*

For more data circle No. 40 on postcard, p. 115.

Rollover hopper holds shipping boxes or kegs

NesTier rollover hopper conveniently supplies worker with contents of boxes or kegs without re-handling into other containers. The unit makes it possible to take small parts to assembly or production areas in their original shipping boxes or kegs. In use, a full box

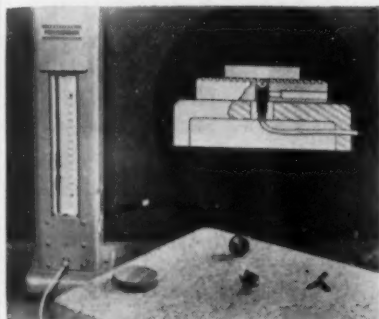
or keg with lid removed is slid into a bolted-down rollover hopper through back panel opening, retaining lid is secured and the unit rotated on its pivot trunnions. Hopper tray is designed for easy 3-finger withdrawal of contents. *Chas. Wm. Doepke Mfg. Co., Inc.*

For more data circle No. 41 on postcard, p. 115.



Plunjet flatness gages

Steel or stone flatness gages are suited for checking surface flatness and surface irregularities to a high degree of accuracy. The gaging element is a Plunjet gaging cartridge mounted in a steel or stone surface plate so that the contact point of the Plunjet projects



slightly above the surface of the plate. Amplification is 2000 to 1. Workpieces are presented to the surface plate and passed over the contact point of the gaging cartridge. Instantly, variations from flat are indicated by the position of the float in the Precisionaire. No special skills are required to operate this gage. *Sheffield Corp.*

For more data circle No. 42 on postcard, p. 115.

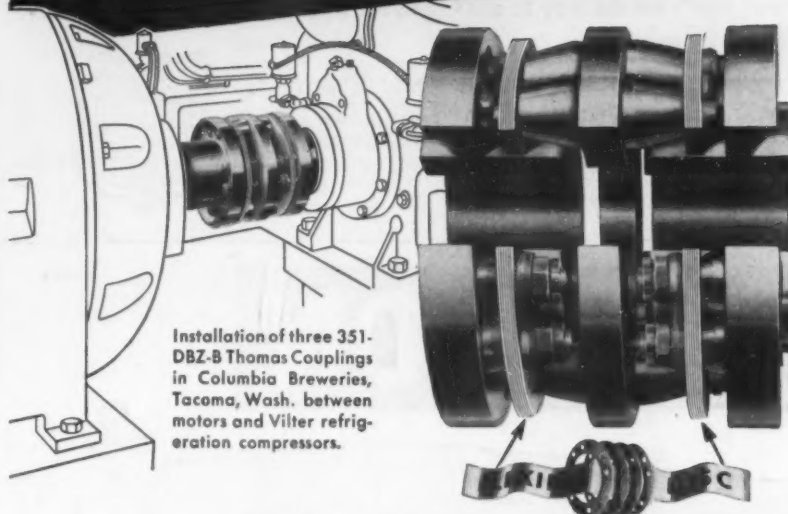
Protects tools, parts

A low-cost transparent strippable coating of the water-white type, Thermo-Cote K, may be used to protect parts and tools from both corrosion and abrasion. The material has a butyrate base that permits low temperature application at 300°F. Supplied in small blocks, the material is melted and brought to proper dipping temperature. It forms a shiny, transparent, skin-tight coating. *Bischoff Chemical Corp.*

For more data circle No. 43 on postcard, p. 115.

Turn Page

THOMAS FLEXIBLE COUPLINGS... for more years of better service!

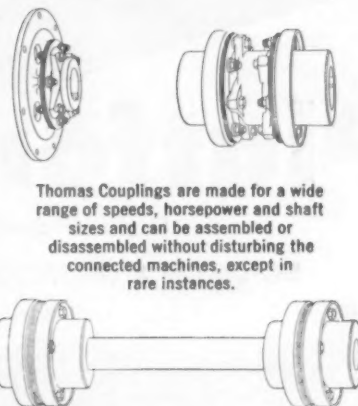


Installation of three 351-DBZ-B Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

DISTINCTIVE ADVANTAGES

FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention. Visual Inspection While Operating.
NO LUBRICATION	No Wearing Parts. Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.



Thomas Couplings are made for a wide range of speeds, horsepower and shaft sizes and can be assembled or disassembled without disturbing the connected machines, except in rare instances.

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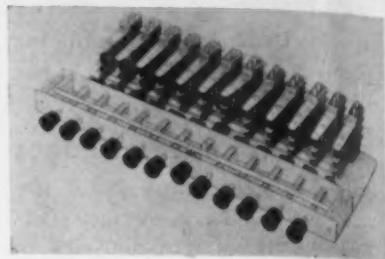
EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.

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Pushbutton switches

A multitude of circuits are brought under control with the versatile operation and contact combinations possible in new pushbutton switches. Compact, sturdy in construction, and easily mounted, they



are the answer to efficient and centralized control. The switch consists of a new, extruded, sturdy frame on which are mounted pushbutton units of from 2 to a maximum of 12 positions. Supplied in the following types: Accumulative lock; no two interlock; lock release; and non-lock. *General Control Co.* For more data circle No. 44 on postcard, p. 115.

Oven chain lubricator

Colloidal graphite lubrication of all movable parts subject to temperatures up to 1000° F in industrial ovens and furnaces, with safety to the oiler, is made possible with the new reach-easy oven chain lubricator. A long, thin extension applicator tube lubricates well into all



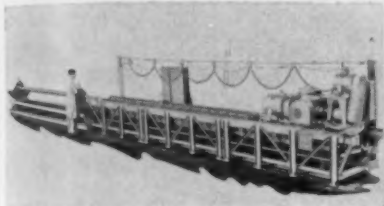
formerly inaccessible parts. A slow-speed agitator thoroughly mixes the graphite with the liquid carrier, keeps graphite in suspension during the lubrication process. Application is controlled by trigger action. *R. G. White Engineering Co.*

For more data circle No. 45 on postcard, p. 115.

NEW EQUIPMENT

Long-stroke honing

For production-honing of parts that have exceptionally long bores a new series of horizontal Micro-honing machines supplies the power and speeds required for rapid and heavy stock removal. The machines in the No. 6000 Series may be built to stroke any length over 5 ft. Model 6020 has a 20 ft stroke with a diameter capac-

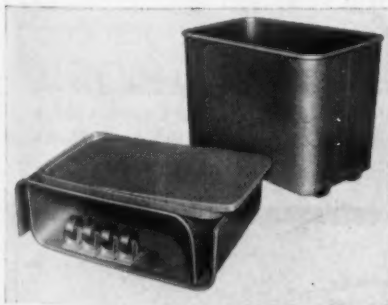


ity of 10 in.; larger diameter capacity is possible on shorter bores. The head, which is stroked by an electric motor with a clutch arrangement allowing reverse direction, rides on two rails and is mechanically reciprocated with a gear and a rack. Seven combinations of four spindle speeds range between 44 and 350 rpm. *Micro-matic Hone Corp.*

For more data circle No. 46 on postcard, p. 115.

Steel floor trucks

Round - cornered, knocked - down steel floor trucks, designed for use in warehousing and metalworking industries feature smooth rolled top, 18-gage cold rolled steel construction, angle base frames, chan-



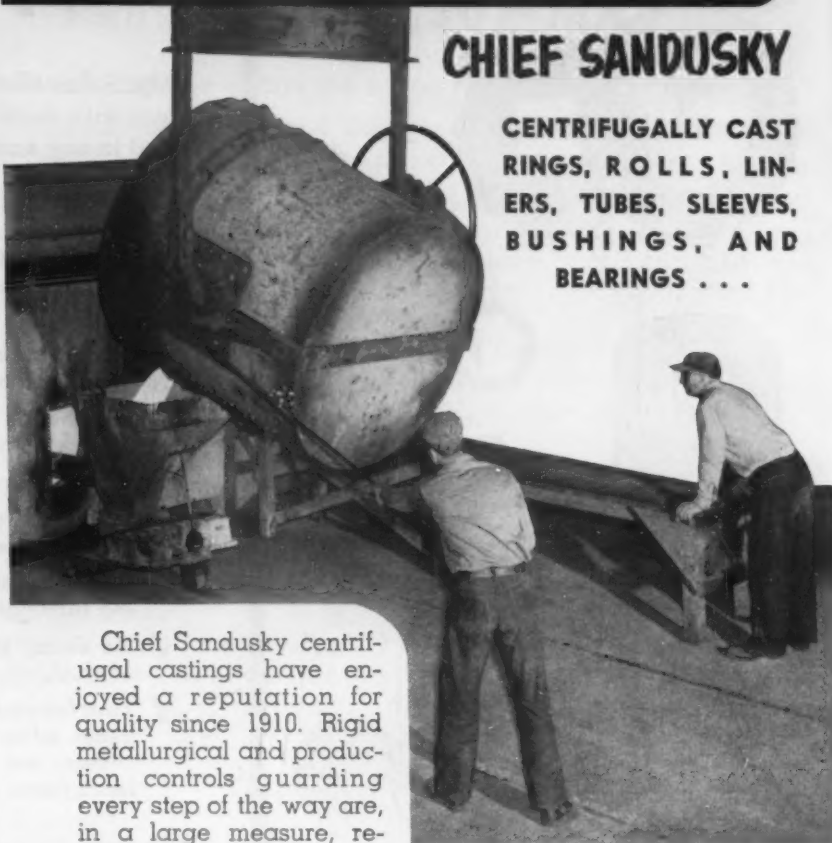
nel caster supports. All are equipped with 5-in. roller bearing steel casters. Additional features include: Ease of assembly by unskilled men; ease of handling in narrow aisles; aluminum or stainless steel construction available on special order; five-year guarantee. *Kennett Equipment & Machinery Co.*

For more data circle No. 47 on postcard, p. 115.

a Big Power UNDER RIGID METALLURGICAL AND PRODUCTION CONTROLS

CHIEF SANDUSKY

CENTRIFUGALLY CAST RINGS, ROLLS, LINERS, TUBES, SLEEVES, BUSHINGS, AND BEARINGS . . .



Chief Sandusky centrifugal castings have enjoyed a reputation for quality since 1910. Rigid metallurgical and production controls guarding every step of the way are, in a large measure, responsible.

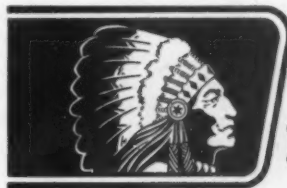
Accidents may be lucky or not. But neither kind has any place in the making of highly specialized cylindrical castings.

From initial laboratory analyses through exacting production steps to delivery of the finished product, Chief Sandusky castings have been watched over by very particular experts—equipped with eagle eyes.

The makers of Chief Sandusky centrifugal castings know that to hold the position of leadership they have earned, they must constantly search out improvements, develop better methods, and adhere to standards of highest quality.

This is all to the advantage of users . . . who agree that the best in cylindrical castings bear the name, "Chief Sandusky."

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...by CLAYMONT

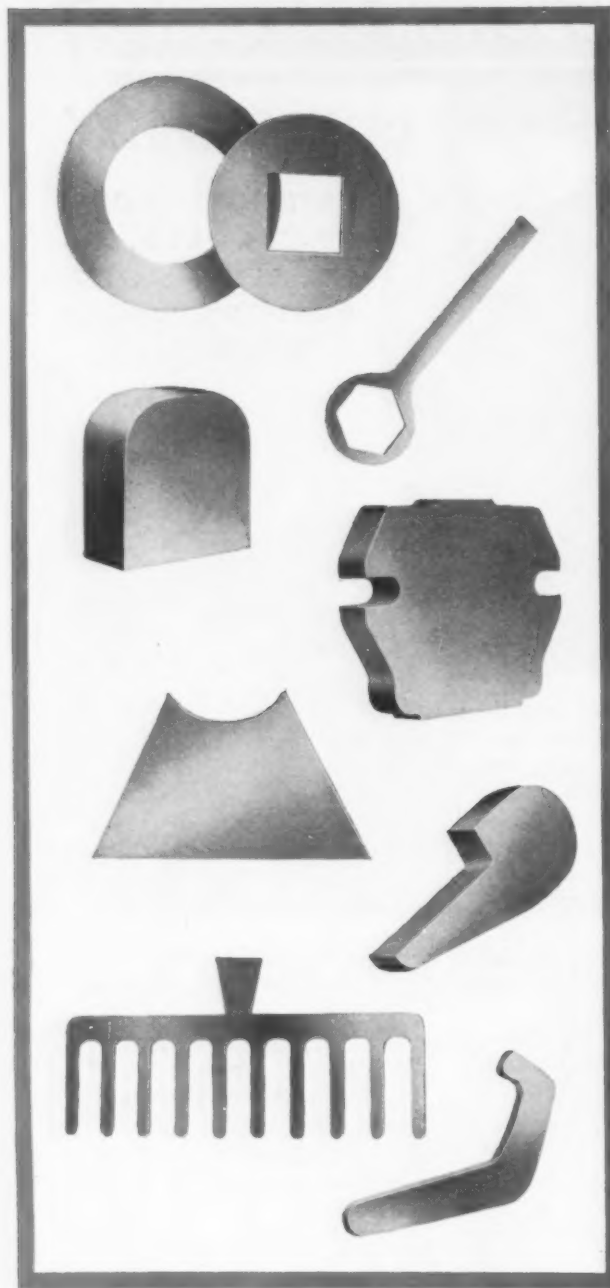
Our Fabrications Department is equipped to furnish you with flame cut plates in any shape, any size and in any amount . . . cut from steel and alloy plates.

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- ✓ Elimination of freight charges on excess metal. Complete elimination of scrap handling on your part.
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- ✓ Uninterrupted steel supply from our own producing facilities.
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Our local representative will be pleased to call on you at any convenient time—to explain what our complete warehousing and fabricating facilities can mean to you in terms of prompt attention to your particular requirements. Fill in and mail the attached coupon—right now.

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The Iron Age SUMMARY . . .

Steel officials watching new orders like hawks for first signs of upturn . . .

Operating rate gains a point to 63.0 pct of rated capacity.

New Orders . . . Steel sales officials are watching new orders like hawks for earliest possible confirmation on an upturn in steel buying. They are encouraged by a silent increase in new business this week. And they are hopeful that the next 2 weeks will make it clear to all that the market has passed its turning point and is on its way up. Some officials are reviewing tabulations of new business done each day.

Despite a lot of anxiety and some pessimistic statements, the market is so far following the course that had been generally predicted. Inventory correction and vacations kept the lid on production through the summer. But now that most consumers' stocks are pretty well adjusted, and the end of mass vacations is near, the market is ripe for an upturn.

Stimulus . . . All that is needed is a strong stimulus. It is still expected that the stimulus will prove to be automotive buying for new models. Auto buying, too, has hit bottom. It should be clearly on the increase within the next few weeks.

Distribution . . . Although the auto industry consumes about half of all the cold-rolled sheets produced, substantial increases in automotive

buying of other products will probably be noted first. Sheets can be obtained on relatively quick delivery. And consumers don't like to tie up money and risk damage to quality by stocking them far in advance.

Automotive buying for new models will probably show up first in stainless and alloy steel products which require longer production cycles.

Products . . . Galvanized sheets are still a leader, booked through November in some mills. Oil country goods and structurals are also in very good demand. Plates are easing due to dip in linepipe and tank fabrications.

Warehouses . . . Distributor sales are a shade better in August than they were in vacation-flattened July. Although they expect to do considerably better during next few months, there may be some inventory trimming. Because of narrow profit margin, they feel they must speed their turnover. In order to do so, there has been a good deal of price cutting in nearly all areas.

Production . . . Steelmaking operations this week are scheduled at 63.0 pct of rated capacity, up one point from the previous week. Ingot production index is estimated at 93.1 (1947-49 = 100).

Steel Output, Operating Rates

	This Week†	Last Week	Month Ago	Year Ago
Production				
(Net tons, 000 omitted)	1,496	1,474	1,532	2,106
Ingot Index				
(1947-49=100)	93.1	91.8	95.4	131.1
Operating Rates				
Chicago	66.0	66.0*	65.0	97.0
Pittsburgh	62.0	61.0*	60.0	92.0
Philadelphia	56.0	56.0	56.0	96.0
Valley	62.0	58.0	60.0	98.0
West	75.5	76.0*	82.5	91.5
Detroit	74.0	68.0	60.0	105.0
Buffalo	56.5	56.5	56.5	106.5
Cleveland	54.0	55.0*	61.5	97.0
Birmingham	65.0	58.0	76.0	94.0
S. Ohio River	72.0	72.0	68.0	75.5
Wheeling	76.0	83.0*	86.0	98.0
St. Louis	46.5	51.5	47.5	94.0
East	48.0	48.0	32.0	89.5
Aggregate	63.0	62.0	64.5	94.0

* Revised. † Tentative

Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite prices				
Finished Steel, base	4.801	4.801	4.801	4.634
Pig Iron (gross ton)	\$56.59	\$56.59	\$56.59	\$56.76
Scrap, No. 1 hvy (gross ton)	\$28.67	\$28.67	\$27.33	\$41.67
Nonferrous				
Aluminum, ingot	22.20	22.20	21.50	21.50
Copper, electrolytic	30.00	30.00	30.00	29.50
Lead, St. Louis	13.80	13.80	13.80	13.80
Magnesium, ingot	27.75	27.75	27.75	27.00
Nickel, electrolytic	63.08	63.08	63.08	63.08
Tin, Straits, N. Y.	93.25	92.625	96.125	82.25
Zinc, E. St. Louis	11.00	11.00	11.00	11.00



Here's Enduro Stainless Steel Quality for only 9% more cost

That's the experience of the Guardian Locker Division of The Flibble Company, Millersburg, Ohio. They're making and selling public rental lockers. They use ENDURO Stainless Steel for all exterior sections, and for interior bottom sections—at the place where wear is heaviest. They're making coin receivers and lock parts of ENDURO, too.

Cost is only 9% more than it would be for the same locker made of plain carbon steel, painted. Revenue increases from the stainless steel lockers are reported to range from 15% to 40%.

Women particularly are attracted by the bright, clean-looking ENDURO finish. It has a psychological "sell". And, ENDURO naturally is easier to maintain. Easy to keep clean and bright look-

ing. ENDURO will not tarnish. It resists abrasion and denting. It has no applied surface to chip, peel, or wear away. It lasts long. It is easy to fabricate.

Here's more proof that ENDURO brightwork sells. That it appeals to everyone. It can do the same for your products. Republic metallurgists will help you apply ENDURO's "bonus benefits" to step up interest and sales power . . . efficiently and economically. Just write:

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REPUBLIC
ENDURO STAINLESS STEEL



◆ **THE STEEL MARKET** looks ripe for an upturn. But the stimulus needed to spur it to renewed activity is still lacking. So the market continues to bump along in its worn, hard summer rut.

When a market stimulus is felt, it will probably come from the auto industry which is preparing one of the most sweeping model changes since World War II. And all eyes are focused on Detroit to detect the first hint of steel buying for new models.

Contrary to what you might expect, first significant buying may be noted on products other than sheets. Although the auto industry consumes about half of all the cold-rolled sheets produced by the industry, there are several reasons why veteran steel sales officials are watching some other steel products for first signs of renewed automotive buying.

In the first place, consumers do not like to tie up funds and risk deterioration by stocking cold-rolled sheets far in advance of use—especially when they can be bought on short delivery as they can now.

This week producers report a better tone in stainless and alloy markets, although they admit there hasn't been enough new business to shake a stick at. One reason they will be cautious about calling an upturn is that they have twice been victims of premature optimism over these products this year.

Some easing is also to be expected in oil country goods, another segment of the "solid" side of the market. But this won't hurt so badly if automotive orders do not disappoint.

SHEETS AND STRIP . . . Strongest market is reported from Chicago, but even there hot-rolled sheets are quoted on 2 to 3 week delivery and cold-rolled sheets about 4 weeks. You can get them still quicker if you shop around. This market can't make a strong move without healthy support from the automotive industry. Pittsburgh mills report new orders coming in very slowly. Some price cutting at warehouse level is reported in several areas, as distributors strive to move their stocks. Stainless sheet and strip are moving fairly well in Cleveland, not so well in Pittsburgh. Steel officials expect some improvement in these products.

STEEL PRODUCT MARKETS

Market Lingers in Summer Rut

Sheet sales best in the Midwest . . . Bar market still slow . . . Structural are moving well, but plates remain sluggish . . .

Report warehouse price-cutting in several centers

Galvanized sheets are still strong, particularly in the Chicago area, where order books look good through November. Despite heavy purchasing, consumer stocks do not appear unduly high.

Steel salesmen in Detroit are morose, reflecting the pessimism of assembly line down-time. Feeling is that sheets have hit bottom for the year.

BARS . . . Market continues very slow. Slight improvement is noted in hot-rolled bars in Chicago and Cleveland. But this is still a very dull market. Recent improvement in Pittsburgh has had no follow-through. No improvement is noted in cold-finished bars. Nearly all types and sizes of both hot and cold-rolled may be had on short delivery. Some farm equipment buying has helped hot-rolled bar market in Chicago, but it's had little effect on overall tonnage.

STRUCTURAL AND PLATE . . . Structural demand in the East is holding a good, steady pace which is expected to hold the fourth quarter. Highway construction is continuing a healthy stimulant. Chicago volume is still good, though mild softening is a possibility for next month. Impact would be immediate, since there is virtually no backlog at mill level. Structural are holding their own on the West Coast.

Plate demand is still generally

easing. In Chicago delivery is on 2 to 3 week basis, with spot tonnage available for immediate use. Linepipe decline is being definitely felt. There is also evidence of some moderately high plate inventories among some fabricators. Plates are sluggish in the East, with predicted upturn still not in sight. Plates are moving fairly well on the West Coast. Recent improvement has been noted for bridge-work, refinery and water power installations.

TUBULAR . . . Market is spotty. Pittsburgh producers report market for oil country goods holding well. Chicago demand is very strong. There is some evidence of mild pickup at jobber level in butt-weld and steel pipe generally. Mechanical tubing shows modest improvement. Mechanical and pressure tubing has softened in the East. But pipe for construction use is moving well; number of orders and tonnage are up.

WIRE PRODUCTS . . . Cleveland demand is a little stronger, with industrial and agricultural orders moving west. Customers are ordering a little ahead when they can't get spot delivery. Manufacturers wire lagging in Chicago. But merchant products volume is holding, despite spotty ordering from jobbers.

TIN PLATE . . . Reports from Pittsburgh: August shipments will be slightly better than in July, but substantially below the average. The crop outlook is not encouraging, particularly in view of drought conditions in some western and mid-western states. July shipments were well below those of June, when a record 700,000 tons plus moved from mills and warehouses to the can companies. As a result of the heavy June shipments, the can makers have plenty of plate in inventory. Jones & Laughlin Steel Corp. has established a price of \$6.175 on heavy gage electrolytic tin-coated sheet, 100 lb base. This sheet is used in applications other than can making.

Purchasing Agent's Checklist

STEEL: An upward adjustment coming soon p. 51

CONGRESS: Results in favorable business climate p. 59

PUMPS: Primed for a fall buying upsurge p. 61

TITANIUM: Production gets a sharp boost p. 63

Ike Nixes Tariff Boost

President gives alternate plan calling for greater stockpiling . . . May buy 200,000 tons of lead, 300,000 of zinc in fiscal '55—By R. L. Hatschek.

◆ **PRESIDENT** Eisenhower has finally come out with his promised plan to aid the ailing lead-zinc industry. It does not include higher tariffs which were recommended by the U. S. Tariff Commission. But it does assure the industry that the government will be a heavy buyer of these metals at least through fiscal 1955.

Reason for the White House rejection of the proposed tariff boosts was that it would be too big a blow to U. S. foreign relations despite any domestic advantages that would have resulted.

The alternate plan calls for heavier stockpiling of newly mined domestic metal—perhaps as much as 200,000 tons of lead and 300,000 tons of zinc in the period up to June 30, 1955. This buying would be at the going market price.

In addition, the President recommended the use of surplus American food in trade for foreign lead and zinc. This would go into a supplemental stockpile recently authorized by enactment of the Agricultural Trade Development and Assistance Act. State Dept. has also been ordered to urge foreign producers to cooperate by not flooding the U. S. market with larger lead and zinc imports.

These measures, plus a general gain in economic strength, Mr. Eisenhower believes, may be enough assistance to put the lead-zinc industry back on its feet. If they

aren't sufficient, he added, he will be ready to weigh more sweeping moves early next year and ask congressional aid in getting the required action.

If lead and zinc do remain in the doldrums through the rest of this year, President Eisenhower's first move would probably be to recommend a subsidy plan such as the one outlined earlier in this column (see **THE IRON AGE**, Aug. 19, p. 178).

LEAD-ZINC . . . Markets, at least up until the President announced this program, continued almost deathly quiet. But the already accelerated stockpiling program still serves to hold present price quotations as the floor. Producers generally seem to regard the President's act as a step in the right direction—one that may help boost prices within a few months, perhaps.

But the producers would still rather have benefit of higher import duties. Feeling is that this stockpiling plan will have only a temporarily beneficial effect and that the problem of metal imports will still have to be faced at some time in the future.

Importers, on the other hand, are quick to point out that the 200,000 tons of lead and 300,000 tons of zinc would be more than enough to absorb all current stocks. These stocks now stand at about 90,000 tons of lead and 190,000 tons of zinc, adding up to a tremendous burden on the industry.

Final tally of lead shipments to consumers in July shows a nosedive from 46,987 tons shipped in June to 37,195 tons. This, however, is strictly sea-

sonal, reflecting vacation shutdowns during the month.

Labor is kicking up its heels again in the nonferrous metals with Anaconda Copper Mining Co. zinc smelters shut down Monday by International Union of Mine, Mill and Smelter Workers. The union also shut down several plants of American Brass Co., an Anaconda subsidiary (see below).

COPPER . . . Consumers were beginning to scramble for copper as Mine, Mill closed down Anaconda's Montana facilities early this week. Coming on top of the Kennecott Copper Corp. strike both in the U. S. and in Chile, the new strike really puts a squeeze on copper supplies. Several American Brass plants were also shut down by strikes Monday.

Since most copper consumers have been living out of their stocks as much as possible, they may be in serious trouble now if the strike lasts for any appreciable length of time.

ALUMINUM . . . Numerous conflicting reports have been published lately regarding the part to be played by Reynolds Metals Co. in the \$270 million power and metal development planned for British Columbia by Frobisher, Ltd. The Canadian press seems especially excited about the prospects—and justifiably.

But the plain fact is that Reynolds and Frobisher are still in the talking stage and no plans have been finalized. At this stage it could still come to nothing—or it might grow to the full 30 pct interest some have reported. One possibility is that Reynolds may be the first to build an Alaskan aluminum smelter, utilizing British Columbia power.

On-again-off-again third round aluminum expansion is off again. That's the decision reported by Office of Defense Mobilization last week. The decision does not alter any government commitments already made to companies preparing to produce primary metal.

Major factor in making this decision was the total capacity expansion already made or in the making which will push the total annual figure to 1.54 million tons very shortly. Others include reduced military demand, expectation of greater Canadian primary supply and additional secondary production.

TIN . . . An unusual degree of stability was shown by the tin market last week—quotation stayed at 92.625¢ per lb for 4 days. Market was extremely quiet and only small tonnages changed hands.

Daily Nonferrous Metal Prices

(Cents per lb except as noted)

	Aug. 18	Aug. 19	Aug. 20	Aug. 21	Aug. 23	Aug. 24
Copper, electro, Conn.	30.00	30.00	30.00	30.00	30.00	30.00
Copper, Lake, delivered	30.00	30.00	30.00	30.00	30.00	30.00
Tin, Straits, New York	92.625	92.625	92.625	....	93.25	93.25*
Zinc, East St. Louis	11.00	11.00	11.00	11.00	11.00	11.00
Lead, St. Louis	13.80	13.80	13.80	13.80	13.80	13.80

Note: Quotations are going prices

*Tentative

Better castings cost less . . .

with

RESINOX

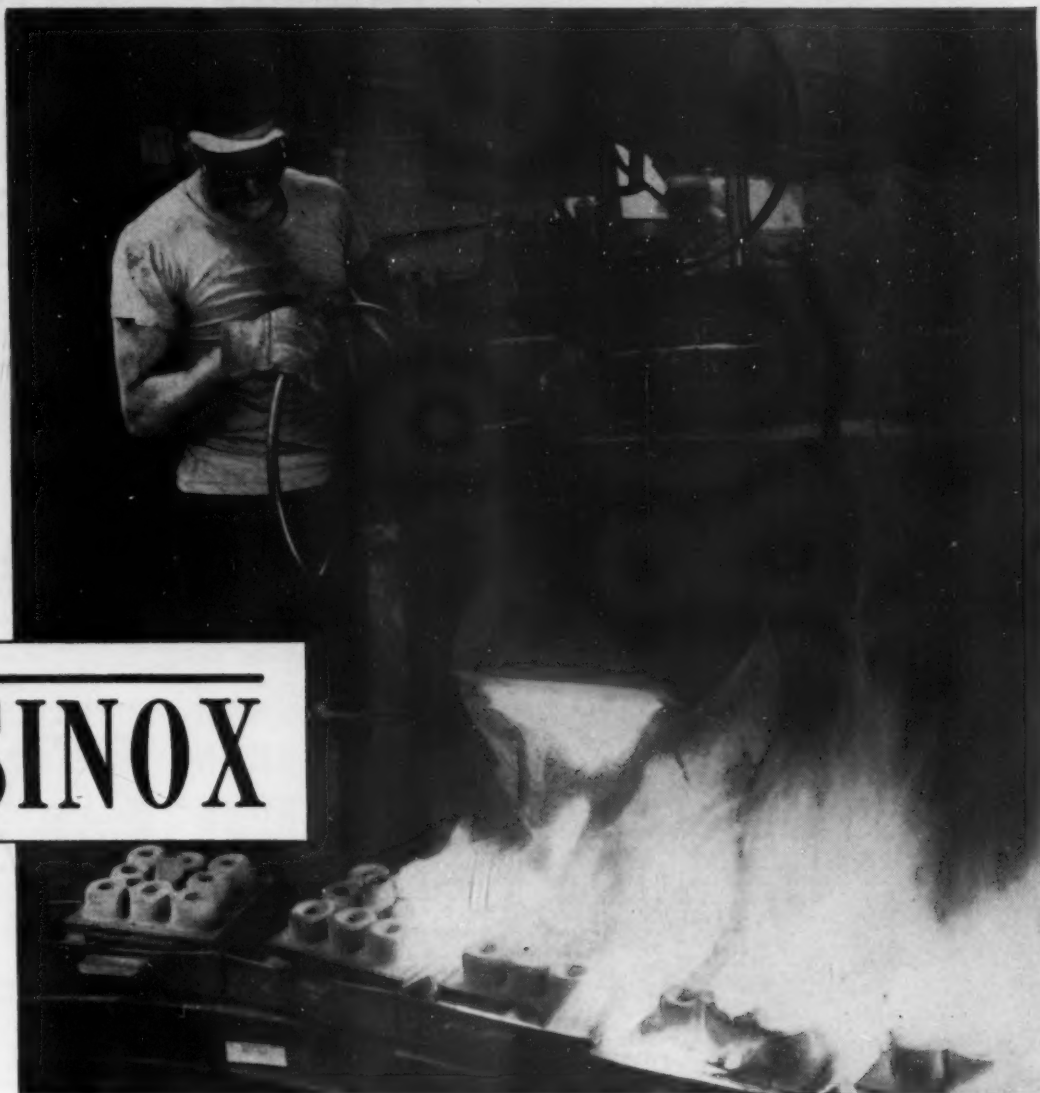


Photo courtesy of Midwest Foundry Company, Coldwater, Michigan

Here are shell molding savings that speak for themselves! 60% saving in production time . . . 80% less machining . . . up to 50% closer tolerances . . . production rates increased threefold . . . labor costs cut in half . . . initial plant cost reduced 25% . . . 14% more metal yield . . . up to 4 times more production per man hour . . . half a million close-tolerance items without a single reject. These are actual results, reported by leading foundries who use *Resinox*[®] shell molding resins.

The quality of the resin is an all-important

part of shell molding. And *Resinox* resins, as used by hundreds of foundries, produce castings with more uniform quality, better finish, far lower reject rate and more accurate dimensions — at impressive savings. Like all Monsanto foundry resins, *Resinox* is research-developed and shop-tested to meet your requirements.

For information on *Resinox* shell molding resins, *Resinox* phenolic and *Resimene*[®] urea resins for core binding, and *Lytron*[®] sand conditioner for conventional sand casting, mail the handy coupon today.

* Reg. U. S. Pat. Off.

MONSANTO CHEMICAL COMPANY, Plastics Division, Room 5907, Springfield 2, Mass.

Please send me complete information on: ☐ *Resinox* shell molding resins; ☐ Monsanto core binding resins;
☐ Monsanto phenolic resins; ☐ *Lytron* sand conditioner.

Name & Title _____

Company _____

Address _____

City, Zone, State _____



SERVING INDUSTRY . . . WHICH SERVES MANKIND

August 26, 1954

Nonferrous Prices

(Effective Aug. 24, 1954)

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb. f.o.b. ship. pt., frt. allowed)

Flat Sheet: 0.136-0.249 in., 2S, 3S, 34.9¢; 4S, 37.1¢; 52S, 39.2¢; 24S-O, 24S-OAL, 35.3¢; 7S S-O, 76S-OAL, 45.8¢; 0.081 in., 2S, 3S, 36.1¢; 4S, 38.8¢; 52S, 40.9¢; 24S-O, 24S-OAL, 39.8¢; 76S-O, 76S-OAL, 48.1¢; 0.032 in., 2S, 3S, 38.1¢; 4S, 43.0¢; 52S, 45.7¢; 24S-O, 24S-OAL, 48.4¢; 76S-O, 76S-OAL, 59.8¢.

Plate, 1/4-in. and heavier: 2S-F, 3S-F, 33.6¢; 4S-F, 35.7¢; 52S-F, 37.4¢; 61S-O, 36.8¢; 24S-O, 24S-OAL, 38.4¢; 76S, 76S-OAL, 45.8¢.

Extruded Solid Shapes: Shape factors 1 to 5, 37.7¢ to 85.7¢; 12 to 14, 28.4¢ to \$1.03; 24 to 26, 41.2¢ to \$1.34; 36 to 38, 48.8¢ to \$1.96.

Rod, Round: Rolled, 1.064-4.5 in., 2S-F, 42.6¢ to 39.1¢; cold finished, 0.375-3.499 in., 2S-F, 46.9¢ to 41.4¢.

Screw Machine Stock: Rounds, 11S-T3, 1/4-11/32 in., 62.5¢ to 40.1¢; 1/2-1 1/2 in., 48.9¢ to 45.9¢; 1 9/16-3 in., 44.7¢ to 41.7¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051-0.374 in., 2S, 46.1¢ to 34.8¢; 52S, 55.7¢ to 43.4¢; 17S-T4, 63.3¢ to 43.7¢; 61S-T4, 58.5¢ to 43.1¢.

Extruded Tubing: Rounds, 6S-T5, OD 1 1/4-2 in., 43.4¢ to 63.8¢; 2-4 in., 39.3¢ to 53.6¢; 4-6 in., 39.8¢ to 48.8¢; 6-9 in., 40.4¢ to 51.1¢.

Roofing Sheet: Flat, per sheet, 0.032-in. 42 1/2 x 60-in., \$2.918; x 96-in., \$4.672; x 120-in., \$5.841; x 144-in., \$7.009. Coiled sheet, per lb, 0.019 in. x 28 in., 29.9¢.

Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: FS1-O 1/4 in., 56¢; 3/16 in., 57¢; 1/8 in., 60¢ 0.064 in., 73¢; 0.032 in., 94¢. Specification grade higher. Base 30,000 lb.

Extruded Round Rod: M, diam 1/4 to 0.311 in., 77¢; 1/2 to 1/4 in., 60.5¢; 1 1/4 to 1.749 in., 54¢; 2 1/2 to 3 in., 51.5¢; Other alloys higher. Base up to 1/4 in. diam, 10,000 lb; 1/2 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M, in weight per ft. for perimeters less than size indicated: 0.10 to 0.11 lb, 3.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft. of shape: Up to 1/4 lb, 10,000 lb; 1/2 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.067 in. wall thickness: OD, 1/4 to 5/16 in., \$1.43; 6/16 to 1/2 in., \$1.29; 1/2 to 3/4 in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall: OD, 1/4 to 1/2 in., 44¢; 1 to 2 in., 60¢; 3 to 4 in., 69¢. Other alloys higher. Base, OD: Up to 1 1/2 in., 10,000 lb; 1 1/2 to 4 in., 20,000 lb; over 4 in., 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$11; Bar, HR or forged, \$6; Forgings, \$6.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	86 1/2	67 1/2	92 1/2
Strip, CR	92 1/2	70 1/2	98 1/2
Rod, bar	82 1/2	65 1/2	88 1/2
Angles, HR	82 1/2	65 1/2	88 1/2
Plate, HR	84 1/2	66 1/2	90 1/2
Seamless tube	115 1/2	100 1/2	137 1/2
Shot, blocks		60	

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	46.41	44.73	48.48
Copper, h-r	48.38	44.73	
Copper, drawn		45.98	
Low brass	44.47	44.41	
Yellow brass	41.72	41.66	
Red brass	45.44	45.38	
Naval brass	45.76	40.07	
Lead brass			39.11
Comm. bronze	46.95	46.89	
Mang. bronze	49.48	43.62	45.18
Phos. bronze	66.58	67.08	
Muntz metal	43.96	39.77	41.02
NI silver, 10 pct	55.36		62.63
Beryllium copper, CR, 1.9% Be, Base			
2000 lb, f.o.b.			
Strip			\$1.68
Rod, bar, wire			1.65

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed 22.20
Aluminum pig 20.50
Antimony, American, Laredo, Tex. 28.50
Beryllium copper, per lb conta'd be. \$40.00
Beryllium aluminum 5% Be, Dollars
per lb contained Be \$72.75
Blamush, ton lots 22.25
Cadmium, del'd 1.70
Cobalt, 97-99% (per lb) \$2.60 to \$2.67
Copper, electro, Conn. Valley 30.00
Copper, Lake, delivered 30.00
Gold, U. S. Treas., per troy oz. \$35.00
Indium, 99.8%, dollars per troy oz. \$2.25
Iridium, dollars per troy oz. \$165 to \$175
Lead, St. Louis 13.80
Lead, New York 14.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig 27.00
Ingot 27.75
Magnesium, sticks, 100 to 500 lb, 46.00 to 48.00

Mercury, dollars per 76-lb flask, f.o.b. New York \$290 to \$293
Nickel electro, f.o.b. N. Y. warehouse 63.03
Nickel oxide sinter, at Copper Creek, Ont., contained nickel 56.25
Palladium, dollars per troy oz. \$21.00
Platinum, dollars per troy oz. \$84 to \$87
Silver, New York, cents per troy oz. 85.25
Tin, New York 93.25
Titanium, sponge, grade A-1 \$4.72
Zinc East St. Louis 11.00
Zinc New York 11.50
Zirconium copper, 50 pct 56.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot
No. 115 27.00-28.50
No. 120 26.25-27.75
No. 123 25.75-27.25
80-10-10 ingot
No. 305 31.50-33.00
No. 315 29.25-30.75
88-10-2 ingot
No. 210 41.25-41.75
No. 215 37.75-38.25
No. 245 33.25-33.75
Yellow ingot
No. 405 23.25-24.25
Manganese bronze
No. 421 26.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper, max. 23.25-23.50
0.60 copper, max. 23.00-23.25
Piston alloys (No. 122 type) 20.25-21.75
No. 12 alum. (No. 2 grade) 19.50-20.25
108 alloy 20.25-20.50
195 alloy 21.00-23.00
13 alloy (0.60 copper max.) 23.00-23.25
ASX-679 20.25-20.50

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—96-97 1/2% 21.00-21.50
Grade 2—92-95% 20.00-20.50
Grade 3—90-92% 19.00-19.50
Grade 4—85-90% 18.00-18.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper
Cast, oval, 15 in. or longer 42.64
Electrodeposited 41.88
Flat rolled 45.04
Brass, 80-20
Cast, oval, 15 in. or longer 43.515
Zinc, flat cast 30.35
Ball, anodes 18.50
Nickel, 99 pct plus
Cast 84.00
Cadmium 81.70
Silver 999 fine, rolled, 100 oz. lots per troy oz., f.o.b. Bridgeport, Conn. 94 1/2

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum 63.00
Copper sulfate, 99.5 crystals, bbl. 12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed 30.00
Nickel chloride, 375 lb drum 38.00
Silver cyanide, 100 oz. lots, per oz. 75 1/2
Sodium cyanide, 96 pct domestic 200 lb drums 19.25
Zinc cyanide, 100 lb drum 54.30

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25 1/2
Yellow brass	19 1/2	18
Red brass	23	22 1/2
Comm. bronze	23 1/2	23 1/2
Mang. bronze	18 1/2	17 1/2
Yellow brass rod ends	19 1/2	

Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 27 —27 1/2
No. 2 copper wire 25 1/2 —25 1/2
Light copper 24 —24 1/2
*Refinery brass 23 —24
*Dry copper content.

Ingot Makers' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 26 1/2 —27
No. 2 copper wire 25 1/2 —25 1/2
Light copper 23 1/2 —24
No. 1 composition 21 1/2 —22
No. 1 comp. turnings 20 1/2 —21
Rolled brass 17
Brass pipe 18 1/2
Radiators 17 1/2 —18

Aluminum

Mixed old cast 13 —13 1/2
Mixed new clips 14 —14 1/2
Mixed turnings, dry 13 1/2 —13 1/2
Pots and pans 13 —13 1/2

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire. 24 1/2 —25
No. 2 heavy copper and wire. 23 —23 1/2
Light copper 21 —21 1/2
New type shell cuttings 20 1/2
Auto radiators (unsweated) 19
No. 1 composition 19 —19 1/2
No. 1 composition turnings 18 1/2 —19
Unlined red car boxes 18
Cocks and faucets 16 —16 1/2
Mixed heavy yellow brass 11
Old rolled brass 15 1/2
Brass pipe 16 1/2 —17
New soft brass clippings 18
Brass rod ends 16
No. 1 brass rod turnings 15

Aluminum

Alum. pistons and struts 7 —8
Aluminum crankcases 10
2S aluminum clippings 10
Old sheet and utensils 10
Borings and turnings 6 —7
Misc. cast aluminum 10
Dural clips (24S) 11

Zinc

New zinc clippings 6 —6 1/2
Old zinc 4 1/2 —5
Zinc routings 3 —3 1/2
Old die cast scrap 3 —3 1/2

Nickel and Monel

Pure nickel clippings 60 —65
Clean nickel turnings 40
Nickel anodes 60 —65
Nickel rod ends 60 —65
New Monel clippings 23 —25
Clean Monel turnings 16 —18
Old sheet Monel 21 —23
Nickel silver clippings, mixed 15
Nickel silver turnings, mixed 13

Lead

Soft scrap lead 11 —11 1/2
Battery plates (dry) 8 1/2 —9
Batteries, acid free 4 1/2

Magnesium

Segregated solids 18 1/2 —19
Castings 17 1/2 —18

Miscellaneous

Block tin 75 —80
No. 1 pewter 55 —60
No. 1 auto babbitt 12 —12 1/2
Mixed common babbitt 10 1/2
Solder joints 14 1/2
Siphon tops 15 1/2
Small foundry type 14
Monotype 13
Lino. and stereotype 12 1/2
Electrotype 8 1/2
Hand picked type shells 5 1/2
Lino. and stereo. dross 4
Electro dross 4

FIRST

...to use a flotation process to convert lean "specular jaspery" ore

At the plant of the Humboldt Mining Company, Ishpeming, Michigan, this process was first applied to produce concentrates from jasper rock. The accompanying photographs show some of the operations. This plant, owned jointly by the Cleveland-Cliffs Iron Company and the Ford Motor Company can turn out more than 200,000 tons of high grade ore per year.

Humboldt Mine
Steffensen Flotation Machine



Close-Up Steffensen
Flotation Machine



General View of
Humboldt Mine



LAKE SUPERIOR IRON ORE • VESSEL TRANSPORTATION • COAL • FERRO ALLOYS

THE Cleveland-Cliffs IRON COMPANY
UNION COMMERCE BUILDING • CLEVELAND 14, OHIO

East Is Market Bright Spot

**Export demand continues to spur East Coast market . . .
No. 1 material tightening . . . But domestic mill buying stays
low . . . Rest of market dull . . . Composite unchanged.**

♦ The East Coast remains one bright spot in a generally dull scrap market. Export activity is brisk, and the trade is definitely optimistic. Domestic orders are still few and far between, but heavy export demand, particularly for No. 1 grades, is as yet unslaked.

Those mills that are buying are taking advantage of freight arbitrage from the more inland yards to furnaces. But export orders dominate the pricing structure. The trade is confident that sizable orders from domestic consumers would force prices up for good material—one broker says \$2 to \$3 per ton for No. 1 grades. Some smaller operators have been hard put to cover orders at going prices. Buffalo is feeling the pinch as brokers work to compensate for reduced water receipts via canal from more coastal locations.

Away from the East, scrap dozed in an end of summer lull. Prices were holding up, with railroad grades rising at some points, but continued lack of new orders could lower prices in the near future. However, most Midwest dealers and brokers were holding the line against the long-awaited fall pick-up.

THE IRON AGE Heavy Melting Scrap Composite remained unchanged at \$28.57 per gross ton.

Pittsburgh . . . The market is on dead center. Prices are unchanged. Lack of activity has pinned the market down and chances are 50-50 that quotations will go either way. While good material is not plentiful, a continuance of the current disinterest could push prices down. Contrariwise, buying of any quantity might force the mills to pay more.

Philadelphia . . . No basic change is reported in this market for this

week. Export business continues to be the main source of activity with local mills seemingly disinterested in scrap. It's generally felt that if the local mills want scrap, they'll have to pay more for it since the Philadelphia export price is still over the mill price when considering freight.

Chicago . . . With another week of depressed shipments, Chicago scrap prices continued to hold at going levels. Railroad was even showing some strength on list prices, and reroller rail moved up \$1. No. 2 bundles, despite a long period of depressed pricing, were in better shape from a supply standpoint and dealers were holding the price line on this grade despite reported offers from out of area to sell at reduced prices.

New York . . . Continued market activity confirms last week's IRON AGE prices for this area. One consumer continues to buy at going rate, taking advantage of freight arbitrage to meet export prices. But majority of this business is in bundles. Exports have cut into supplies of No. 1 steel and bundles severely. Trade sources say that mills must be prepared to pay \$2 to \$3 higher for these grades when they come into the market. One broker is not accepting orders for No. 1 steel unless tied in with No. 2 grades. The trade is confident that the market will be firm for the next month at least, maybe longer. Higher prices are expected when domestic buying perks up.

Detroit . . . Late summer dog days have settled over the Detroit market. "There is no scrap being generated, none consumed, and no interest in buying," one broker declared. September lists of automotive scrap will be about 30 pct of the tonnage generated in a normal month. But little hope is held out by the trade that this will stimulate prices to any significant degree. Prices remained

the same in the absence of any new buying.

Cleveland . . . September revival appeared less and less of a possibility in the Cleveland area as more openhearth mills went out of service and mills saw little to indicate a revival. Dealer and mill inventories continue high and collections slow. One mill has only quarter of its openhearth capacity in operation and a third of blast furnace capacity.

Birmingham . . . Export prices still dominate the southeastern scrap market for openhearth grades, with quotations for No. 1 and No. 2 steel and No. 2 bundles prevalent throughout the district. Local steel consumers have not increased their general buying prices despite the movement of moderate tonnages to port cities. Cast continues firm, with additional sales being made at prevailing prices.

St. Louis . . . Railroad lists of the Missouri Pacific, 50 carloads, Louisville & Nashville, 1000 tons, and the St. Louis Southwestern, 300 tons, which closed late last week brought higher prices on all railroad grades. No. 1 Railroad heavy melting led with an advance of \$3.50 per ton, with other items up \$1 to \$2 per ton. Cast iron grades also were higher based on sales made to Birmingham. Other items are unchanged.

Cincinnati . . . Market was continued steady with one area steel producer at good operating rate although another has less than one-tenth of furnaces going pending startup of new mill.

Buffalo . . . A good undertone prevails in scrap here despite lack of new buying. Dealers report difficulty in finding supplies to cover orders placed at current levels. In some instances, profit margins are small. Export sales have cut water receipts via canal from the East.

Boston . . . Export business continues to keep the New England market just a bit busy. No new domestic sales were reported and prices this week remain unchanged.

West Coast . . . Cast iron pipe foundries in Los Angeles buying less cast scrap. Shops in area see a drop of \$2 per ton next month. Seattle demand also easing off. But San Francisco pipe shop demand continues strong. Except for cast activity, market and prices remain unchanged.

NEW ALL-PURPOSE

"TRICLENE"® D

(TRICHLORETHYLENE)

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Du Pont's solvent is unsurpassed in any vapor degreasing job!

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extras

EXTRA DURABILITY. With the greatest all-around ruggedness ever built into a trichlorethylene, new "Triclene" D has unsurpassed resistance to *all* major causes of solvent breakdown—heat, light, air, metal chlorides, and acidic materials—yet contains nothing to harm the most delicate metal surfaces.

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Try new "Triclene" D and see why we consider it the greatest improvement ever made in any trichlorethylene for vapor degreasing. Your

Du Pont representative will be glad to give you further details on new "Triclene" D. Call him today or fill out and mail coupon below.

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New All-Purpose

"TRICLENE" D

Trichlorethylene



REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

SEND FOR THIS NEW DESCRIPTIVE FOLDER

E. I. du Pont de Nemours & Co. (Inc.) IA-826
Electrochemicals Department, Wilmington 98, Del.

- ☐ Please send me your descriptive folder on new, all-purpose "TRICLENE" D.
☐ Please have your representative call with the details.

Name _____ Position _____

Firm _____

Address _____

City _____ State _____



Scrap Prices

(Effective Aug. 24, 1954)

Pittsburgh

No. 1 hvy. melting	\$29.00 to \$30.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 bundles	29.00 to 30.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	15.50 to 16.50
Mixed bor. and ma. turna.	15.50 to 16.50
Shoveling turnings	19.50 to 20.50
Cast iron borings	18.00 to 19.00
Low phos. punch'gs, plate	32.00 to 33.00
Heavy turnings	27.00 to 28.00
No. 1 RR. hvy. melting	31.50 to 32.50
Scrap rails, random lgth.	37.00 to 38.00
Rails 2 ft and under	43.00 to 44.00
RR. steel wheels	35.00 to 36.00
RR. spring steel	35.00 to 36.00
RR. couplers and knuckles	35.00 to 36.00
No. 1 machinery cast.	42.00 to 43.00
Cupola cast.	34.00 to 35.00
Heavy breakable cast.	30.00 to 31.00

Chicago

No. 1 hvy. melting	\$29.00 to \$30.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 factory bundles	31.00 to 32.00
No. 1 dealers' bundles	29.00 to 30.00
No. 2 dealers' bundles	21.00 to 22.00
Machine shop turn.	14.00 to 15.00
Mixed bor. and turn.	16.00 to 17.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	16.00 to 17.00
Low phos. forge crops	35.00 to 36.00
Low phos. punch'gs, plate	33.00 to 34.00
Low phos. 3 ft and under	32.00 to 33.00
No. 1 RR. hvy. melting	32.00 to 33.00
Scrap rails, random lgth.	36.00 to 38.00
Rerolling rails	44.00 to 45.00
Rails 2 ft and under	44.00 to 45.00
Locomotive tires, cut	33.00 to 34.00
Cut bolsters & side frames	35.00 to 36.00
Angles and splice bars	37.00 to 38.00
RR. steel car axles	40.00 to 41.00
RR. couplers and knuckles	35.00 to 36.00
No. 1 machinery cast.	39.00 to 40.00
Cupola cast.	36.00 to 37.00
Heavy breakable cast.	29.00 to 30.00
Cast iron brake shoes	31.00 to 32.00
Cast iron car wheels	33.00 to 34.00
Malleable	40.00 to 41.00
Stove plate	29.00 to 30.00

Philadelphia Area

No. 1 hvy. melting	\$26.50 to \$27.50
No. 2 hvy. melting	24.50 to 25.50
No. 1 bundles	26.50 to 27.50
No. 2 bundles	18.00 to 19.00
Machine shop turn.	14.00 to 15.00
Mixed bor. short turn.	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Shoveling turnings	17.00 to 18.00
Clean cast chem. borings.	20.00 to 21.00
Low phos. 5 ft and under	28.00 to 29.00
Low phos. 2 ft and under	29.00 to 30.00
Low phos. punch'gs	29.00 to 30.00
Elec. furnace bundles	26.50 to 27.50
Heavy turnings	24.00 to 25.00
RR. steel wheels	31.50 to 32.50
RR. spring steel	31.50 to 32.50
Rails 18 in. and under	41.00 to 42.00
Cupola cast.	34.00 to 35.00
Heavy breakable cast.	35.00 to 36.00
Cast iron carwheels	35.00 to 36.00
Malleable	36.00 to 37.00
Unstripped motor blocks.	27.00 to 28.00
No. 1 machinery cast.	40.00 to 41.00
Charging box cast.	36.00 to 37.00

Cleveland

No. 1 hvy. melting	\$28.00 to \$29.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 bundles	28.00 to 29.00
No. 2 bundles	23.00 to 24.00
No. 1 bushelling	28.00 to 29.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	16.00 to 17.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	16.00 to 17.00
Cut struct'l & plate, 2 ft & under	31.50 to 33.00
Drop forge flashings	26.00 to 27.00
Low phos. 2 ft & under	30.00 to 31.00
No. 1 RR. heavy melting	29.00 to 30.00
Rails 3 ft and under	42.00 to 43.00
Rails 18 in. and under	43.00 to 44.00
Railroad grate bars	27.00 to 28.00
Steel axle turnings	19.00 to 20.00
Railroad cast.	41.00 to 42.00
No. 1 machinery cast.	41.00 to 42.00
Stove plate	34.00 to 35.00
Malleable	40.00 to 41.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	\$29.00 to \$31.00
No. 2 hvy. melting	25.00 to 27.00
No. 1 bundles	30.00 to 32.00
No. 2 bundles	23.00 to 25.00
Machine shop turn.	14.00 to 15.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. plate	30.00 to 32.00

Buffalo

No. 1 hvy. melting	\$26.00 to \$27.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 bushelling	26.00 to 27.00
No. 1 bundles	26.00 to 27.00
No. 2 bundles	20.00 to 21.00
Machine shop turn.	14.50 to 15.50
Mixed bor. and turn.	17.50 to 18.50
Shoveling turnings	18.00 to 18.50
Cast iron borings	17.50 to 18.50
Low phos. plate	29.00 to 30.00
Scrap rails, random lgth.	33.00 to 34.00
Rails 2 ft and under	40.00 to 41.00
RR. steel wheels	34.00 to 35.00
RR. spring steel	34.00 to 35.00
RR. couplers and knuckles	34.00 to 35.00
No. 1 machinery cast.	38.00 to 39.00
No. 1 cupola cast.	34.00 to 35.00

Detroit

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$22.00 to \$23.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 bundles, openhearth	23.00 to 24.00
No. 2 bundles	16.00 to 17.00
New bushelling	21.00 to 22.00
Drop forge flashings	21.00 to 22.00
Machine shop turn.	7.00 to 8.00
Mixed. bor. and turn.	9.00 to 10.00
Shoveling turnings	9.00 to 10.00
Cast iron borings	9.00 to 10.00
Low phos. punch'gs, plate.	22.00 to 23.00
No. 1 cupola cast.	32.00
Heavy breakable cast.	23.00
Stove plate	28.00
Automotive cast.	36.00

St. Louis

No. 1 hvy. melting	\$25.00 to \$26.00
No. 2 hvy. melting	23.50 to 24.50
No. 1 bundles	25.00 to 26.00
No. 2 bundles	19.50 to 20.50
Machine shop turn.	12.50 to 13.00
Cast iron borings	13.00 to 14.00
Shoveling turnings	14.00 to 15.00
No. 1 RR. hvy. melting	32.50 to 33.50
Rails, random lengths	35.00 to 36.00
Rails, 18 in. and under	42.00 to 43.00
Locomotive tires, uncut	31.00 to 32.00
Angles and splice bars	31.00 to 32.00
Std. steel car axles	35.00 to 36.00
RR. spring steel	31.00 to 32.00
Cupola cast.	41.00 to 42.00
Hvy. breakable cast.	30.00 to 31.00
Cast iron brake shoes	26.00 to 27.00
Stove plate	35.00 to 36.00
Cast iron car wheels	32.00 to 33.00
Malleable	35.00 to 36.00
Unstripped motor blocks.	30.00 to 31.00

New York

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$20.50 to \$21.50
No. 2 hvy. melting	17.50 to 18.50
No. 2 bundles	15.00 to 16.00
Machine shop turn.	5.00 to 6.00
Mixed bor. and turn.	7.00 to 8.00
Shoveling turnings	8.00 to 9.00
Clean cast chem. borings.	14.00 to 15.00
No. 1 machinery cast.	35.00 to 36.00
Mixed yard cast.	29.00 to 30.00
Charging box cast.	29.00 to 30.00
Heavy breakable cast.	27.00 to 28.00
Unstripped motor blocks.	22.00 to 23.00

Birmingham

No. 1 hvy. melting	\$28.50
No. 2 hvy. melting	19.50
No. 1 bundles	30.00
No. 2 bundles	\$15.00 to 16.00
No. 1 bushelling	20.50
Machine shop turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	15.00 to 16.00
Electric furnace bundles	26.00 to 27.00
Bar crops and plate	29.00 to 30.00
Structural and plate, 3 ft	29.00 to 30.00
No. 1 RR. hvy. melting	26.00 to 27.00
Scrap rails, random lgth.	34.00 to 35.00
Rails, 18 in. and under	37.50 to 38.50
Angles & splice bars	35.00 to 36.00
Rerolling rails	39.50 to 40.00
No. 1 cupola cast.	43.50 to 44.50
Stove plate	40.50 to 41.50
Charging box cast.	19.00 to 20.00
Cast iron car wheels	33.00 to 34.00
Unstripped motor blocks.	34.50 to 35.50
Mashed tin cans	15.00 to 16.00

Boston

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	\$18.00 to \$19.00
No. 2 hvy. melting	14.25 to 15.25
No. 1 bundles	18.00 to 19.00
No. 2 bundles	14.00 to 15.00
No. 1 bushelling	18.00 to 19.00
Elec. furnace, 3 ft & under	18.00 to 19.00
Machine shop turn.	4.00 to 5.00
Mixed bor. and short turn.	8.00 to 9.00
Shoveling turnings	10.00 to 11.00
Clean cast chem. borings.	11.00 to 12.00
No. 1 machinery cast.	29.00 to 30.00
Mixed cupola cast.	26.00 to 27.00
Heavy breakable cast.	25.00 to 26.50
Stove plate	25.00 to 26.00
Unstripped motor blocks.	15.00 to 16.00

Cincinnati

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	\$25.50 to \$26.50
No. 2 hvy. melting	22.50 to 23.50
No. 1 bundles	26.00 to 27.00
No. 2 bundles	19.00 to 20.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	14.50 to 15.50
Shoveling turnings	14.50 to 15.50
Cast iron borings	14.50 to 15.50
Low phos., 18 in. & under	32.00 to 33.00
Rails, random lengths	35.00 to 36.00
Rails, 18 in. and under	43.00 to 44.00
No. 1 cupola cast.	38.00 to 39.00
Hvy. breakable cast.	34.00 to 35.00
Drop broken cast.	43.00 to 44.00

San Francisco

No. 1 hvy. melting	\$20.00
No. 2 hvy. melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 3 bundles	12.00
Machine shop turn.	5.00
Cast iron borings	8.00
No. 1 RR. hvy. melting	20.00
No. 1 cupola cast.	\$42.00 to 48.00

Los Angeles

No. 1 hvy. melting	\$20.00
No. 2 hvy. melting	16.00
No. 1 bundles	19.00
No. 2 bundles	\$15.50 to 16.00
No. 3 bundles	12.00
Machine shop turn.	5.00
Shoveling turnings	7.00 to 9.00
Cast iron borings	7.00 to 9.00
Elec. fur. 1 ft and under	25.00
No. 1 RR. hvy. melting	20.00
No. 1 cupola cast.	42.00 to 48.00

Seattle

No. 1 hvy. melting	\$25.00
No. 2 hvy. melting	21.00
No. 1 bundles	21.50
No. 2 bundles	17.00
No. 3 bundles	13.00
No. 1 cupola cast.	35.00
Mixed yard cast.	35.00

Hamilton, Ont.

No. 1 hvy. melting	\$22.00
No. 2 hvy. melting	19.00
No. 1 bundles	22.00
No. 2 bundles	19.00
Mixed steel scrap	16.00
Bushellings	17.00
Bush., new fact prep'd	20.00
Bush., new fact unprep'd	16.00
Short steel turnings	12.00
Mixed bor. and turn.	12.00
Rails, remelting	31.00
Cast scrap	\$48.00 to 45.00

A
SYMBOL
OF
LEADERSHIP
IN
IRON & STEEL
SCRAP
SINCE
1889



Luria Brothers and Company, Inc.

MAIN OFFICE
LINCOLN-LIBERTY BLDG.

Philadelphia 7, Penna.

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LEBANON, PENNA.	DETROIT (ECORSE),
READING, PENNA.	M I C H I G A N
MODENA, PENNA.	PITTSBURGH, PENNA.
	ERIE, PENNA.

OFFICES

BIRMINGHAM, ALA.	DETROIT, MICHIGAN	PITTSBURGH, PENNA.
BOSTON, MASS.	HOUSTON, TEXAS	PUEBLO, COLORADO
BUFFALO, N. Y.	LEBANON, PENNA.	READING, PENNA.
CHICAGO, ILLINOIS	LOS ANGELES, CAL.	ST. LOUIS, MO.
CLEVELAND, OHIO	NEW YORK, N. Y.	SAN FRANCISCO, CAL.
	SEATTLE, WASH.	

EXPORTS-IMPORTS — LIVINGSTON & SOUTHARD, INC., 99 Park Avenue, New York, N. Y. Cable Address: FORENTRACO

August 26, 1954

Comparison of Prices

(Effective Aug. 24, 1954)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Aug. 24 1954	Aug. 17 1954	July 27 1954	Aug. 15 1953
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.05¢	4.05¢	4.05¢	3.925¢
Cold-rolled sheets	4.95	4.95	4.95	4.775
Galvanized sheets (10 ga.)	5.45	5.45	5.45	5.275
Hot-rolled strip	4.05	4.05	4.05	3.925
Cold-rolled strip	5.82	5.82	5.82	5.575
Plate	4.237	4.237	4.237	4.10
Plates wrought iron	9.30	9.30	9.30	9.00
Stainl's C-R strip (No. 302)	41.50	41.50	41.50	41.50
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	\$8.95	\$8.95	\$8.95	\$8.95
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.65
Special coated mfg. ternes	7.75	7.75	7.75	7.75
Bars and Shapes: (per pound)				
Merchant bars	4.312¢	4.312¢	4.312¢	4.15¢
Cold-finished bars	5.40	5.40	5.40	5.20
Alloy bars	5.075	5.075	5.075	4.875
Structural shapes	4.25	4.25	4.25	4.10
Stainless bars (No. 302)	35.50	35.50	35.50	35.50
Wrought iron bars	10.40	10.40	10.40	10.05
Wire: (per pound)				
Bright wire	5.75¢	5.75¢	5.75¢	5.525¢
Rails: (per 100 lb.)				
Heavy rails	\$4.45	\$4.45	\$4.45	\$4.325
Light rails	5.35	5.35	5.35	5.20
Semifinished Steel: (per net ton)				
Re-rolling billets	\$64.00	\$64.00	\$64.00	\$62.00
Slabs, re-rolling	64.00	64.00	64.00	62.00
Forging billets	78.00	78.00	78.00	75.50
Alloy blooms, billets, slabs	86.00	86.00	86.00	82.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.675¢	4.675¢	4.675¢	4.525¢
Skelp	3.90	3.90	3.90	3.75
Finished Steel Composite: (per pound)				
Base price	4.801¢	4.801¢	4.801¢	4.684¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

	Aug. 24 1954	Aug. 17 1954	July 27 1954	Aug. 25 1953
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	\$61.19	\$61.19	\$61.19	\$62.19
Foundry, Valley	56.50	56.50	56.50	56.50
Foundry, Southern, Cin'ti.	60.43	60.43	60.43	60.43
Foundry, Birmingham	52.88	52.88	52.88	52.88
Foundry, Chicago	56.50	56.50	56.50	56.50
Basic del'd Philadelphia	60.27	60.27	60.27	61.27
Basic, Valley furnace	56.00	56.00	56.00	56.00
Malleable, Chicago	56.50	56.50	56.50	56.50
Malleable, Valley	56.50	56.50	56.50	56.50
Ferromanganese, cents per lb.	10.00¢	10.00¢	10.00¢	10.00¢
‡ 76 pct Mn base.				
Pig Iron Composite: (per gross ton)				
Pig iron	\$56.59	\$56.59	\$56.59	\$56.76
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	\$29.50	\$29.50	\$28.50	\$43.50
No. 1 steel, Phila. area	27.00	27.00	24.00	42.50
No. 1 steel, Chicago	29.50	29.50	29.50	39.00
No. 1 bundles, Detroit	23.50	23.50	22.00	49.50
Low phos., Youngstown	31.00	31.00	30.50	48.50
No. 1 mach'y cast, Pittsburgh	42.50	42.50	42.50	49.50
No. 1 mach'y cast, Philadel's	40.50	40.50	39.50	45.50
No. 1 mach'y cast, Chicago	39.50	39.50	39.50	43.00
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	\$28.67	\$28.67	\$27.33	\$41.67
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	\$14.38	\$14.38	\$14.38	\$14.75
Foundry coke, prompt	16.75	16.75	16.75	17.25
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.00	30.00	30.00	29.50†
Copper, Lake, Conn.	30.00	30.00	30.00	30.125
Tin, Straits, New York	93.25†	92.625*	96.125	82.25
Zinc, East St. Louis	11.00	11.00	11.00	11.00
Lead, St. Louis	13.80	13.80	13.80	13.80
Aluminum, virgin ingot	22.20	22.20	21.50	21.50
Nickel, electrolytic	63.08	63.08	63.08	63.08
Magnesium, ingot	27.75	27.75	27.75	27.00
Antimony, Laredo, Tex.	28.50	28.50	28.50	34.50
† Tentative. ‡ Average. * Revised.				

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

← To identify producers, see Key on P. 149 →

Producing Point	Basic	Fdry.	Mall.	Beas.	Low Phos.
Bethlehem B3	58.00	58.50	59.00	59.50	.....
Birmingham R3	52.38	52.88	.....	.....	.....
Birmingham W9	52.38	52.88	.....	.....	.....
Birmingham U4	52.38	52.88	56.50	.....	.....
Buffalo R3	56.00	56.50	57.00	.....	.....
Buffalo T11	56.00	56.50	57.00	.....	.....
Buffalo W6	56.00	56.50	57.00	.....	.....
Chicago I4	56.00	56.50	56.50	57.00	.....
Cleveland A5	56.00	56.50	56.50	57.00	61.00
Cleveland R3	56.00	56.50	56.50	.....	.....
Dangerfield L3	52.50	52.50	52.50	.....	.....
Duluth I4	56.00	56.50	56.50	57.00	.....
Erie I4	56.00	56.50	56.50	57.00	.....
Everett M6	.....	61.00	61.50	.....	.....
Fontana K1	62.00	62.50	.....	.....	.....
Geneva, Utah C7	56.00	56.50	.....	.....	.....
Granite City G2	57.50	58.40	58.90	.....	.....
Hubbard Y1	.....	.....	56.50	.....	.....
Minnequa C6	58.00	59.00	59.00	.....	.....
Monessen P6	56.00	.....	.....	.....	.....
Neville Isl. P4	56.00	56.50	56.50	.....	.....
Pittsburgh U1	56.00	.....	.....	57.00	.....
Sharpville S3	56.00	56.50	56.50	57.00	.....
Steeltown B3	58.00	58.50	59.00	59.50	64.00
Swedeland A2	58.00	58.50	59.00	59.50	.....
Toledo I4	56.00	56.50	56.50	57.00	.....
Troy, N. Y. R3	58.00	58.50	59.00	59.50	64.00
Youngstown Y1	.....	.....	56.50	57.00	.....
N. Tonawanda T1	.....	56.50	57.00	.....	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.50 pct manganese over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional, 0.25 pct nickel. Subtract 38¢ per ton for phosphorus content 0.70 and over.

Silvery Iron: Buffalo, H1, \$68.25; Jackson, J1, C1 \$67.00. Add \$1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add \$1 per ton for 0.75 pct or more phosphorus. Add 75¢ for each 0.50 pct manganese over 1.0 pct. Bessemer ferroalloy prices are \$1 over comparable silvery iron.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingots, re-rolling	16.25	17.25	18.75	18.25	28.00	22.75	24.50	14.00	.....	14.25
Slabs, billets, re-rolling	20.50	22.75	24.75	23.75	36.25	29.50	32.25	18.25	.....	18.50
Forg. discs, die blocks, rings	38.50	38.50	41.50	40.50	60.00	45.50	50.75	31.00	31.75	31.75
Billets, forging	29.50	29.75	32.25	31.00	46.50	35.25	39.50	24.00	24.50	24.50
Bars, wires, structurals	35.25	35.50	38.25	37.25	55.50	42.00	46.75	28.75	29.25	29.25
Plates	37.25	37.50	39.75	39.75	58.75	45.75	51.25	30.00	30.50	30.50
Sheets	41.25	41.50	48.75	43.75	62.75	50.50	59.25	34.25	41.25	34.75
Strip, hot-rolled	29.75	32.00	36.75	34.25	53.25	41.00	46.50	26.25	.....	27.00
Strip, cold-rolled	38.25	41.50	45.50	43.75	62.75	50.50	59.25	34.25	41.25	34.75
					63.00	50.75				

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; McKeesport, Pa., U1; Washington, Pa., W2, J2; Baltimore, Et; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Ft. Wayne, J4.

Strip: Midland, Pa., C11; Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leeburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Canton-Massillon, O., R3; Middletown, O., A7; Harrison, N. J., D3; Youngstown, C5; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (25¢ per lb higher) W1 (25¢ per lb higher); New Bedford, Mass., R6.

Bar: Baltimore, A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T5; Ft. Wayne, I4.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11

Plates: Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15.

Forged discs, die blocks, rings: Pittsburgh, C11; Syracuse, C11; Ferndale, Mich., A3; Washington, Pa., J2.

Forging billets: Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11.



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B&L Extra Wide Flats are a "must" on every precision job. They help reduce your machining and assembly costs wherever you can apply them for jigs and fixtures, die plates and punch pads, patterns and machinery parts.



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BAR STRIGHTENING is controlled to quite accurate commercial straightness. →



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FOUR PLANTS: HARVEY, ILL. • DETROIT, MICH. • BUFFALO, N. Y. • MANSFIELD, MASS.

IRON AGE

STEEL
PRICES(Effective
Aug. 24, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

	BILLETS, BLOOMS, SLABS			PIL- ING	SHAPES STRUCTURALS			STRIP					
	Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
EAST	Bethlehem, Pa.		\$86.00 B3		4.30 B3	6.45 B3	4.30 B3						
	Buffalo, N. Y.	\$64.00 B3	\$78.00 B3, R3	\$86.00 B3, R3	5.075 B3	4.30 B3	6.45 B3	4.30 B3	4.05 B3,R3	5.75 B3,R7	6.15 B3	8.425 B3	
	Claymont, Del.												
	Coatesville, Pa.												
	Conschocken, Pa.							4.175 A2		6.15 A2			
	New Bedford, Mass.								6.20 R6				
	Harrison, N. J.												
	Johnstown, Pa.	\$64.00 B3	\$78.00 B3	\$86.00 B3		4.30 B3	6.45 B3	4.05 B3					
	Fairless, Pa.												
	New Haven, Conn.								6.20 D1/ 6.50 A5				
	Phoenixville, Pa.				3.95 P2		3.95 P2						
	Sparrows Pt., Md.							4.05 B3	5.75 B3	6.15 B3	8.425 B3		
	Wallingford, Conn.								6.20 W1				
	Worcester, Mass. Pawtucket, R. I.								6.30 N7 6.60 A5				12.75 A1 12.80 N7
MIDDLE WEST	Alton, Ill.							4.225 L1					
	Ashland, Ky.							4.05 A7					
	Canton-Massillon, Deer, Ohio			\$82.00 T3 \$86.00 R3									12.45 G1
	Chicago, Ill.	\$64.00 U1	\$78.00 R3, U1,W8	\$86.00 U1, W8,R3	5.075 U1	4.25 U1, W8	6.40 U1, Y1	4.25 U1	4.05 A1,N4, W8	5.85 A1			
	Cleveland, Ohio		\$78.00 R3							5.75 A5,J3	8.00 A5		12.45 A1
	Detroit, Mich.			\$88.00 R5				4.20 G3,M2	5.90 D1,D2, G3,M2,P11	6.30 G3	8.35 D2 8.75 G3		
	Duluth, Minn.												
	Gary, Ind. Harbor, Indiana	\$64.00 U1	\$78.00 U1	\$86.00 U1, Y1	5.075 J3	4.25 J3, U1	6.40 U1, J3	4.05 J3, U1,Y1	6.00 J3	6.15 U1, J3,Y1	8.00 Y1	6.70 U1, Y1	
	Sterling, Ill.							4.15 N4					
	Indianapolis, Ind.								5.90 C3				
	Newport, Ky.											6.70 N6	
	Middletown, Ohio								5.75 A7				
	Niles, Warren, Ohio Sharon, Pa.							4.05 S1,R3	5.75 S1,R3, T4	6.15 S1, R3	8.00 S1,R3	6.70 S1	12.45 S1
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	\$64.00 U1, J3	\$78.00 J3, U1,C11	\$86.00 U1, C11	5.075 U1	4.25 J3, U1	6.40 J3, U1	4.05 S7,P6	5.75 B4,J3, S7			6.70 S9	12.45 S9
	Perrysburg, Ohio							4.05 P7	5.75 P7				
	Weirton, Wheeling, Follansbee, W. Va.					4.25 W3		4.05 W3	5.75 F3,W3	6.15 W3	8.00 W3		
	Youngstown, Ohio		\$78.00 C10	\$86.00 Y1, C10		4.25 Y1	6.40 Y1	4.05 U1,Y1	5.75 Y1,C5	6.15 U1, Y1	8.00 Y1	6.70 U1, Y1	12.45 C5
WEST	Fontana, Cal.	\$72.00 K1	\$86.00 K1	\$105.00 K1		4.90 K1	7.05 K1	5.25 K1	4.825 K1	7.65 K1	7.25 K1	8.10 K1	14.95 K1
	Geneva, Utah		\$78.00 C7			4.25 C7	6.40 C7						
	Kansas City, Mo.					4.85 S2	7.00 S2		4.65 S2			7.30 S2	
	Los Angeles, Torrance, Cal.		\$87.50 B2	\$106.00 B2		4.95 B2, C7	7.10 B2		4.90 B2,C7	7.80 C1			
	Minneapolis, Colo.					4.70 C6			5.15 C6				
	San Francisco, Niles, Pittsburg, Cal.		\$87.50 B2			4.90 B2 4.95 P9	7.05 B2		4.80 B2,C7				
	Seattle, Wash.		\$91.50 B2			5.00 B2	7.15 B2		5.05 B2, P12				
	Atlanta, Ga.								4.25 A8				
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	\$64.00 T2	\$78.00 T2			4.25 T2,C16 4.28 R3	6.40 T2		4.05 R3, T2,C16		6.15 T2		
	Houston, Tex.		\$85.00 S2	\$93.00 S2		4.65 S2	6.85 S2		4.45 S2			7.10 S2	

STEEL
PRICES(Effective
Aug. 24, 1954)

SHEETS

WIRE
ROD

TINPLATE†

BLACK
PLATEHot-rolled
18 ga.
& heavy.Cold-
rolledGalvanized
10 ga.Enamel-
ing
12 ga.Long
Tern
10 ga.Hi Str.
Low Alloy
H.R.Hi Str.
Low Alloy
C.R.Hi Str.
Low Alloy
Galv.Hot-
rolled
19 ga.Cokes*
1.25-lb.
base boxElectro*
0.25-lb.
base boxHolloware
Enameling
29 ga.

Bethlehem, Pa.

Buffalo, N. Y.

Claymont, Del.

Coatsville, Pa.

Conschocken, Pa.

Harrisburg, Pa.

Hartford, Conn.

Johnstown, Pa.

Fairless, Pa.

New Haven, Conn.

Phoenixville, Pa.

Sparrows Pt., Md.

Worcester, Mass.

Trenton, N. J.

Miles, Ill.

Ashland, Ky.

Canton-Macmillan,
Dover, Ohio

Chicago, Joliet, Ill.

Sterling, Ill.

Cleveland, Ohio

Detroit, Mich.

Newport, Ky.

Gary, Ind. Harbor,
Indiana

Granite City, Ill.

Kokomo, Ind.

Mansfield, Ohio

Middletown, Ohio

Niles, Ohio

Sharon, Pa.

Pittsburgh, Pa.

Midland, Pa.

Butler, Pa.

Perrysburg, Ohio

Weirton, Wheeling,
Fellsmere, W. Va.

Youngstown, Ohio

Fontana, Cal.

Genova, Utah

Kansas City, Mo.

Los Angeles,
Torrance, Cal.

Minneapolis, Colo.

San Francisco, Niles,
Pittsburg, Cal.

Seattle, Wash.

Atlanta, Ga.

Fairfield, Ala.

Alabama City, Ala.

Houston, Texas

4.05 B3

4.95 B3

6.10 B3

7.50 B3

4.675 W6

4.10 A2

6.10 A2

4.10 U1

5.00 U1

6.15 U1

7.55 U1

4.675 B3

4.05 B3

4.95 B3

5.45 B3

6.10 B3

7.50 B3

8.20 B3

4.775 B3

5.80 B3

7.50 B3

4.975 A5

4.85 A7

5.45 A7

5.375 A7

4.85 L1

5.45 R1, R3

5.175 R1

4.85 A1, W3

6.10 U1

4.675 A5, N4, R3

4.775 N4

4.85 J3, R3

4.95 J3, R3

5.375 R3

6.10 J3, R3

7.50 J3, R3

4.675 A5

4.20 G3, M2

5.10 G3

6.25 G3

7.65 G3

4.85 N5

5.45 N5

4.85 J3, U1, Y1

4.95 J3, U1, Y1

5.45 U1, J3

5.375 J3, U1

5.85 U1

6.10 U1, J3, Y1

7.50 U1, Y1

4.675 Y1

5.80 J3, U1, Y1

7.40 J3, U1, Y1

6.10 U1, Y1

4.25 G2

5.15 G2

5.65 G2

5.575 G2

7.80 G2

6.30 G2

4.15 C9

5.95 C9

5.20 C9

4.775 C9

4.95 A7

5.375 A7

5.85 A7

5.175 E2

4.85 S1, R3

4.95 R3

5.45 N3

6.725 N3

5.85 N3

6.10 S1, R3

7.50 R3

5.80 R3

7.40 R3

4.85 J3, U1, P6

4.95 J3, U1, P6

5.45 U1

5.375 U1

6.10 J3, U1

7.50 J3, U1

8.20 U1

4.675 A5

5.80 J3, U1

7.40 J3, U1

6.10 U1

4.875 P6

4.85 P7

4.95 P7

4.675 P7

4.85 W3, W5

4.95 W3, W5, F3

5.45 W3, W5

5.85 W3, W5

6.10 W3

7.50 W3

5.80 W3, W5

7.40 W3, W5

6.10 F3, W5

4.85 U1, Y1

4.95 Y1

5.375 Y1

6.10 U1, Y1

7.50 Y1

4.675 Y1

4.825 K1

6.05 K1

6.875 K1

8.55 K1

5.475 K1

4.15 C7

6.45 C7

5.475 C7, B2

4.925 C6

5.325 C7

5.85 C7

7.15 C7

4.75 C7

5.90 C7

6.20 C7

5.35 R3

4.675 T2, R3

5.80 T2

7.50 T2

4.85 R3, T2

4.95 T2

5.45 R3, T2

6.10 T2

5.075 S2

4.45 S2

STEEL
PRICES(Effective
Aug. 24, 1954)

	BARS						PLATES				WIRE
	Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	
EAST	Bethlehem, Pa.			5.075 B3	6.625 B3	6.45 B3					
	Buffalo, N. Y.	4.30 B3 4.33 R3	4.30 B3 4.33 R3	5.45 B3	5.075 B3 5.105 R3	6.625 B3,B5	6.45 B3	4.225 B3		6.45 B3	5.75 W6
	Claymont, Del.							4.225 C4	5.80 C4		
	Coatesville, Pa.							4.225 L4	5.80 L4		
	Conshohocken, Pa.							4.225 A2	5.275 A2	6.45 A2	
	Harrisburg, Pa.							3.975C3	5.275C3		
	Hartford, Conn.			5.90 R3		6.925 R3					
	Johnstown, Pa.	4.30 B3	4.30 B3		5.075 B3		6.45 B3	4.225 B3		5.80 B3	6.45 B3
	Fairless, Pa.	4.45 U1	4.45 U1		5.225 U1						
	Newark, N. J.			5.85 W10		6.80 W10					
	Camden, N. J.			5.85 P10							
	Putnam, Conn.			5.95 W10							
	Sparrows Pt., Md.		4.30 B3					4.225 B3		5.80 B3	6.45 B3
	Palmer, Worcester, Roadville, Mansfield, Mass.			5.85W11 5.95B5, C14		6.925 A5 7.075 B5					6.85 A5, W6
	Alton, Ill.	4.50 L1									5.925 L1
MIDDLE WEST	Ashland, Newport, Ky.							4.225 A7, N5	5.80 N5		
	Canton-Macmillan, Mansfield, Ohio			5.40 R2 5.44 R3	4.875 T5 5.115 R3	6.325 T5 6.625 R2 6.665 R3		4.225 E2			
	Chicago, Joliet, Ill.	4.30 U1, N4,W8 4.37 R3	4.30 N4 4.37 R3	5.40 A5,W10, W8,B5,L2	5.075 U1, W8 5.145 R3	6.625 A5,W8, W10,L2, B5		4.225 U1,W8, J3, A1	5.275 U1	5.80 U1	6.45 U1
	Cleveland, Ohio	4.36 R3	4.36 R3	5.40 A5,C13		6.625 A5 6.665 C13		4.225 J3 4.285 R3	5.275 J3		6.45 J3
	Detroit, Mich.	4.45 R5,G3		5.55 R5 5.60 B5,P8 5.65 P3	5.175 R5 5.225 C3	6.725 R5 6.825 B5,P3, P8	6.60 G3	4.375 G3			6.60 G3
	Duluth, Minn.										5.75 A5
	Gary, Ind. Harbor, Crawfordsville	4.30 J3, U1, Y1	4.30 J3, U1, Y1	5.40 M5 5.47 R3	5.075 J3, U1, Y1	6.525 M5 6.695 R3	6.45 U1, J3, Y1	4.225 J3, U1, Y1	5.275 J3	5.80 U1, Y1	6.45 U1, J3, Y1
	Granite City, Ill.							4.425 G2			
	Kokomo, Ind.										5.85 C9
	Sterling, Ill.	4.40 N4	4.40 N4								5.85 N4
	Niles, Ohio Sharon, Pa.	4.34 R3						4.225 S1		5.80 S1	6.45 S1
	Pittsburgh, Pa. Midland, Pa.	4.30 J3, U1, C11	4.30 J3, U1	5.40 A5,C8,C11 J3,W10,B4 5.46 R3	5.075 U1,C11	6.625 A5,C11, W10,C8 6.685 R3	6.45 J3, U1	4.225 J3, U1	5.275 U1	5.80 U1	6.45 J3, U1
	Portsmouth, Ohio										5.75 P7
	Weirton, Wheeling, Follansbee, W. Va.	4.30 W3						4.225 W3, W5			
	Youngstown, Ohio	4.30 U1Y1 C10 4.35 R3	4.30 U1, Y1 4.35 R3	5.40 F2, Y1, C10	5.075 U1, Y1, C10	6.625 Y1, C10 6.665 F2	6.45 U1, Y1	4.225 U1, Y1		5.80 Y1	6.45 Y1
WEST	Emeryville, Cal.	5.05 J5	5.05 J5								
	Fontana, Cal.	5.00 K1	5.00 K1		6.125 K1		7.70 K1	4.875 K1		6.45 K1	7.15 K1
	Geneva, Utah							4.225 C7			6.45 C7
	Kansas City, Mo.	4.90 S2	4.90 S2		5.675 S2		7.05 S2				6.35 S2
	Los Angeles, Torrance, Cal.	5.00 B2,C7	5.00 B2,C7	6.85 R3 7.16 R3	6.125 B2		7.15 B2				6.70 B2
	Minnequa, Colo.	4.75 C6	4.75 C6					5.075 C6			5.90 C6
	Portland, Ore.	4.90 O2									
	San Francisco, Niles, Pittsburg, Cal.	5.00 C7, P9 5.05 B2	5.00 C7, P9 5.05 B2				7.20 B2				6.70 C7
	Seattle, Wash.	5.05 B2, P12, N6	5.05 B2, P12				7.20 B2	5.125 B2		6.70 B2	7.35 B2
	Atlanta, Ga.	4.50 A8	4.50 A8								5.95 A8
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	4.30 T2,C16 4.33 R3	4.30 T2, C16 4.33 R3				6.45 T2	4.225 T2 4.255 R3			6.45 T2
	Houston, Ft. Worth, Lone Star, Tex.	4.70 S2	4.70 S2		5.475 S2		6.85 S2	4.40 L3 4.625 S2		6.20 S2	6.85 S2

Steel Prices

(Effective Aug. 24, 1954)

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago	G2 Granite City Steel Co., Granite City, Ill.	P8 Plymouth Steel Co., Detroit
A2 Alan Wood Steel Co., Conshohocken, Pa.	G3 Great Lakes Steel Corp., Detroit	P9 Pacific States Steel Co., Niles, Cal.
A3 Allegheny Ludlum Steel Corp., Pittsburgh	G4 Greer Steel Co., Dover, O.	P10 Precision Drawn Steel Co., Camden, N. J.
A4 American Cladmetals Co., Carnegie, Pa.	H1 Hanna Furnace Corp., Detroit	P11 Production Steel Strip Corp., Detroit
A5 American Steel & Wire Div., Cleveland	I2 Ingersoll Steel Div., Chicago	P12 Pacific Steel Rolling Mills, Seattle
A6 Angell Nail & Chaplet Co., Cleveland	I3 Inland Steel Co., Chicago	R1 Reeves Steel & Mfg. Co., Dover, O.
A7 Armco Steel Corp., Middletown, O.	I4 Interlake Iron Corp., Cleveland	R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
A8 Atlantic Steel Co., Atlanta, Ga.	J1 Jackson Iron & Steel Co., Jackson, O.	R3 Republic Steel Corp., Cleveland
B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.	J2 Jessop Steel Corp., Washington, Pa.	R4 Roebling Sons Co., John A., Trenton, N. J.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco	J3 Jones & Laughlin Steel Corp., Pittsburgh	R5 Rotary Electric Steel Co., Detroit
B3 Bethlehem Steel Co., Bethlehem, Pa.	J4 Joslyn Mfg. & Supply Co., Chicago	R6 Rodney Metals, Inc., New Bedford, Mass.
B4 Blair Strip Steel Co., New Castle, Pa.	J5 Judson Steel Corp., Emeryville, Calif.	R7 Rome Strip Steel Co., Rome, N. Y.
B5 Bliss & Laughlin, Inc., Harvey, Ill.	K1 Kaiser Steel Corp., Fontana, Cal.	S1 Sharon Steel Corp., Sharon, Pa.
C1 Calstrip Steel Corp., Los Angeles	K2 Keystone Steel & Wire Co., Peoria	S2 Sheffield Steel Corp., Kansas City
C2 Carpenter Steel Co., Reading, Pa.	K3 Koppers Co., Granite City, Ill.	S3 Shenango Furnace Co., Pittsburgh
C3 Central Iron & Steel Co., Harrisburg, Pa.	L1 Laclede Steel Co., St. Louis	S4 Simonds Saw & Steel Co., Fitchburg, Mass.
C4 Claymont Products Dept., Claymont, Del.	L2 La Salle Steel Co., Chicago	S5 Sweet's Steel Co., Williamsport, Pa.
C5 Cold Metal Products Co., Youngstown, O.	L3 Lone Star Steel Co., Dallas	S6 Standard Forging Corp., Chicago
C6 Colorado Fuel & Iron Corp., Denver	L4 Lukens Steel Co., Coatesville, Pa.	S7 Stanley Works, New Britain, Conn.
C7 Columbia Geneva Steel Div., San Francisco	M1 Mahoning Valley Steel Co., Niles, O.	S8 Superior Drawn Steel Co., Monaca, Pa.
C8 Columbia Steel & Shafting Co., Pittsburgh	M2 McLouth Steel Corp., Detroit	S9 Superior Steel Corp., Carnegie, Pa.
C9 Continental Steel Corp., Kokomo, Ind.	M3 Mercer Tube & Mfg. Co., Sharon, Pa.	T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
C10 Copperweld Steel Co., Pittsburgh, Pa.	M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.	T2 Tennessee Coal & Iron Div., Fairfield
C11 Crucible Steel Co. of America, New York	M5 Monarch Steel Co., Inc., Hammond, Ind.	T3 Tennessee Products & Chem. Corp., Nashville
C12 Cumberland Steel Co., Cumberland, Md.	M6 Mystic Iron Works, Everett, Mass.	T4 Thomas Strip Div., Warren, O.
C13 Cuyahoga Steel & Wire Co., Cleveland	N1 National Supply Co., Pittsburgh	T5 Tinkens Steel & Tube Div., Canton, O.
C14 Compressed Steel Shafting Co., Readville, Mass.	N2 National Tube Div., Pittsburgh	T6 Tremont Nail Co., Wareham, Mass.
C15 C. O. Carlson, Inc., Thorndale, Pa.	N3 Niles Rolling Mill Div., Niles, O.	T7 Texas Steel Co., Fort Worth
C16 Connors Steel Div., Birmingham	N4 Northwestern Steel & Wire Co., Sterling, Ill.	U1 United States Steel Corp., Pittsburgh
D1 Detroit Steel Corp., Detroit	N5 Newport Steel Corp., Newport, Ky.	U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
D2 Detroit Tube & Steel Div., Detroit	N6 Northwest Steel Rolling Mills, Seattle	U3 Ulbrich Stainless Steels, Wallingford, Conn.
D3 Driver Harris Co., Harrison, N. J.	N7 Newman Crosby Steel Co., Pawtucket, R. I.	U4 U. S. Pipe & Foundry Co., Birmingham
D4 Dickson Weatherproof Nail Co., Evanston, Ill.	O1 Oliver Iron & Steel Co., Pittsburgh	W1 Wallingford Steel Co., Wallingford, Conn.
E1 Eastern Stainless Steel Corp., Baltimore	O2 Oregon Steel Mills, Portland	W2 Washington Steel Corp., Washington, Pa.
E2 Empire Steel Co., Mansfield, O.	P1 Page Steel & Wire Div., Monessen, Pa.	W3 Weirton Steel Co., Weirton, W. Va.
F1 Firth Sterling, Inc., McKeesport, Pa.	P2 Phoenix Iron & Steel Co., Phoenixville, Pa.	W4 Wheatland Tube Co., Wheatland, Pa.
F2 Fitzsimmons Steel Corp., Youngstown	P3 Pilgrim Drawn Steel Div., Plymouth, Mich.	W5 Wheeling Steel Corp., Wheeling, W. Va.
F3 Follansbee Steel Corp., Follansbee, W. Va.	P4 Pittsburgh Coke & Chemical Co., Pittsburgh	W6 Wickwire Spencer Steel Div., Buffalo
G1 Globe Iron Co., Jackson, O.	P5 Pittsburgh Screw & Bolt Co., Pittsburgh	W7 Wilson Steel & Wire Co., Chicago
	P6 Pittsburgh Steel Co., Pittsburgh	W8 Wisconsin Steel Co., S. Chicago, Ill.
	P7 Portsmouth Div., Detroit Steel Corp., Detroit	W9 Woodward Iron Co., Woodward, Ala.
		W10 Wycoff Steel Co., Pittsburgh
		W11 Worcester Pressed Steel Co., Worcester, Mass.
		Y1 Youngstown Sheet & Tube Co., Youngstown

PIPE AND TUBING

Base discounts (per) f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD														SEAMLESS							
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2 In.		2 In.		2 1/2 In.		3 In.		3 1/2-4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																						
Sparrows Pt. B3	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Youngstown R3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Fontana K1	10.75	4.5	13.75	0.5	16.25	3.0	18.75	3.75	19.25	4.75	19.75	5.25	21.25	5.0								
Pittsburgh J3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Alton, Ill. L1	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Sharon M3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Fairless N2	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Pittsburgh N1	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Wheeling W5	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Wheatland W4	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Youngstown Y1	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Indiana Harbor Y1	22.75	7.5	25.75	11.5	28.25	15.0	30.75	15.75	31.25	16.75	31.75	17.25	33.25	17.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Lorain N2	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. B3	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Youngstown R3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0								
Fairless N2	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Fontana K1	14.25		18.25		20.25		20.75		21.25		21.75		22.25									
Pittsburgh J3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Alton, Ill. L1	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Sharon M3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0								
Pittsburgh N1	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Wheeling W5	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0								
Wheatland W4	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0								
Youngstown Y1	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Indiana Harbor Y1	26.25	12.5	30.25	16.5	32.25	20.0	32.75	18.75	33.25	19.75	33.75	20.75	34.25	19.0								
Lorain N2	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75

Threads only, butt weld and seamless 2 1/4 pt. higher discount. Plain ends, butt weld and seamless, 3-in. and under, 4 1/2 pt. higher discount. Butt weld jobbers' discount, 5 pct. Galvanized discounts based on zinc price in range of over 9¢ to 11¢ incl. per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt. e.g., zinc price in range of over 11¢ to 13¢ would lower discounts; zinc price in range of over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

Steel Prices

(Effective Aug. 24, 1954)

To identify producers, see Key on preceding page.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb.	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Pasadena U1	4.45	5.35	5.425				
So. Chicago R3				7.30			
Endley T2	4.45	5.35					
Fairfield T2		5.35		7.30		5.275	
Gary U1	4.45	5.35				5.275	
Ind. Harbor J3	4.45		5.425	7.30		5.275	
Johnstown B3		5.35					
Joliet U1		5.35	5.425				
Kansas City S2				7.30			11.00
Lackawanna B3	4.45	5.35	5.425			5.275	
Minnequa C6	4.45	5.85	5.425	7.30			11.50
Pittsburgh O1						11.00	
Pittsburgh P5						11.50	
Pittsburgh J3				7.30			
Seattle B2				7.80		5.425	11.50
Steelton B3	4.45		5.425			5.275	
Struthers Y1				7.30			
Terrace C7						5.425	
Williamsport S5		5.35					
Youngstown R3				7.30			

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb.	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length)	
		Semi-Processed	Fully Processed
Field	8.025	8.225	
Armature	8.50	8.75	9.25
Elect.	9.10	9.35	9.85
Motor	10.10	10.35	10.85
Dynamo	11.00	11.25	11.75
Trans. 72	11.95	12.20	12.70
Trans. 65	12.50	Grain Oriented	
Trans. 58	13.00	Trans. 60	16.60
Trans. 52	14.00	Trans. 70	17.10

Producing points: Beech Bottom (W5); Brackenridge (A5); Granite City (G2); Indiana Harbor (I3); Mansfield (E2); Newport, Ky. (N5); Niles, O. (N3); Vandergrift (U1); Warren, O. (R3); Zanesville (A7).
* Coils 75¢ higher.

CLAD STEEL

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa., L4	*33.20	
Washington, Pa., J2		
Claymont, Del., C4		
New Castle, Ind., I2		32.50
Nickel-carbon		
10 pct. Coatesville, Pa., L4	38-30	
Inconel-carbon		
10 pct., Coatesville, Pa., L4	46.90	
Monel-carbon		
10 pct. Coatesville, Pa., L4	39.70	

* Includes annealing and pickling, sandblasting.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire	Fence 9-15 1/2 ga.	17 1/2" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbed Wire	Merch. Wire Ann'd	Merch. Wire * Galv.
Alabama City R3	137	146		155	159	6.90	7.30	
Aliquippa, Pa. J3	137	149			156	6.90	7.30	
Atlanta A8	139	151		157	164	7.00	7.35	
Bartonville K2	139	151		157	164	7.00	7.35	
Buffalo W6						6.90	7.30	
Chicago, Ill. N4	137	149		155	162	6.90	7.45	
Cleveland A6	147							
Cleveland A5						6.90		
Crawfordsville M4	139	151		157	159	7.00	7.35	
Donora, Pa. A5	137	146		155	159	6.90	7.30	
Duluth A5	137	146	150	155	159	6.90	7.30	
Fairfield, Ala. T2	137	146		155	159	6.90	7.30	
Galveston D4	139							
Houston S2	145	154			167	7.30	7.70	
Johnstown, Pa. B3	137	149			162	6.90	7.45	
Joliet, Ill. A5	137	146		155	159	6.90	7.30	
Kokomo, Ind. C9	139	148		157	161	7.00	7.35	
Los Angeles B2						7.85		
Kansas City S2	148	158		167	171	7.50	7.90	
Minnequa C6	142	156	150	160	168	7.15	7.55	
Monessen P6	137	151			163	6.90	7.45	
Moline, Ill. R3			145					
Pittsburg, Cal. C7	156	169		179	179	7.85	8.25	
Portsmouth P7						6.90	7.30	
Rankin, Pa. A5	137	146			159	6.90	7.30	
So. Chicago R3	137	146	145	155	159	6.90	7.30	
S. San Francisco C6					179			
Sparrows Pt. B3	139			157	164	7.00	7.35	
Struthers, O. Y1						6.90	7.35	
Worcester A5	143					7.20		
Williamsport, Pa. S5			150					

Cut Nails, carloads, base \$8.30 per keg at Conshohocken, Pa. (A2).

* Alabama City and So. Chicago don't include zinc extra. Galvanized products coming with zinc at 11.0¢ per lb.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgeport, Conn. S7*	5.75	8.05	9.00	11.15	13.85
Buffalo, N. Y. R7	5.75	8.05	9.00	10.95	13.25
Carnegie, Pa. S9		8.05	9.00	11.15	13.85
Cleveland A5	5.75	8.05	9.00	11.15	13.85
Detroit D1	5.90	8.25	9.20	10.95	
Detroit D2	5.90	8.25	9.20		
Harrison, N. J. C11			9.30	11.45	14.15
Indianapolis C5	5.75	8.05	9.00	10.95	
New Castle, Pa. B4	5.75	8.05	9.00	10.95	
New Haven, Conn. D1	6.20	8.35	9.30	11.25	
Pawtucket, R. I. N7	6.30	8.35	9.30	11.45	14.15
Riverdale, Ill. A1	5.85	8.05	9.00	11.15	13.85
Sharon, Pa. S1	5.75	8.05	9.00	11.15	13.85
Trenton R4		8.35	9.30	11.25	13.85
Wallingford W1	6.20	8.35	9.30	11.45	14.15
Warren, Ohio T4	5.75	8.05	9.00	10.95	13.25
Weirton, W. Va. W3	5.85	8.05	9.00	10.95	13.25
Worcester, Mass. A5	6.60	8.35	9.30	11.45	14.15
Youngstown C5	5.75	8.05	9.00	10.95	

* Sold on Pittsburgh base.

BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	28.33	33.97	26.51	31.91
	2 1/2	12	38.15	45.74	35.70	43.67
	3	12	44.05	52.82	41.23	49.73
	3 1/2	11	51.43	61.66	48.13	58.06
	4	10	68.29	81.28	63.92	77.10
National Tube	2	13	28.33	33.97	26.51	
	2 1/2	12	38.15	45.74	35.70	
	3	12	44.05	52.82	41.23	
	3 1/2	11	51.43	61.66	48.13	
	4	10	68.29	81.28	63.92	
Pittsburgh Steel	2	13	28.33	33.97		
	2 1/2	12	38.15	45.74		
	3	12	44.05	52.82		
	3 1/2	11	51.43	61.66		
	4	10	68.29	81.28		

WARE-HOUSES

Cities	City Delivery Charge	Base price, f.o.b., dollars per 100 lb.									
		Sheets		Strip		Plates		Shapes		Bars	
		Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled	Standard Structural	Hot-Rolled	Cold- Finished	Hot-Rolled A 4615 As Rolled	Hot-Rolled A 4140 Annealed
Baltimore	\$.20	6.22	7.51	7.78	6.89		6.57	6.92	6.88	8.52	
Birmingham	.15	6.35	7.35	8.25	6.60	9.60	6.65	6.65	6.50	9.00	
Boston	.10	7.23	8.23	9.42	7.47	9.65	7.34	7.49	7.20	8.60	12.60
				9.52	9.85	7.37	8.70	7.20	8.80	12.46	
Buffalo	.20	6.35	7.40	8.80	6.70		6.65	6.70	6.50	7.85	12.50
		6.40	7.45	8.84	6.75		6.70	6.77	6.55	7.90	
Chicago	.20	6.38	7.38	8.30	6.62		6.52	6.69	6.51	7.50	12.25
							6.52	6.69	6.51	7.50	12.25
Cincinnati	.15	6.49	7.37	8.25	6.86		6.81	6.91	6.75	7.80	12.55
		6.53	7.42	8.30	6.91		6.85	6.80	7.85	12.20	
Cleveland	.20	6.38	7.38	8.45	6.72		6.69	7.02	6.57	7.60	11.96
Denver		7.85	8.85	10.02	8.20		7.95	7.95	8.05	9.05	
Detroit	.20	6.57	7.57	8.50	6.90		6.80	7.16	6.79	7.77	12.45
				8.58			6.85				12.10
Houston	.20	7.35	7.65	9.93	7.70		7.35	7.60	7.70	9.50	13.10
			7.80							9.60	
Kansas City	.20	7.05	8.05	8.95	7.29		7.19	7.36	7.18	8.07	12.27
										8.27	
Los Angeles	.20	7.40	9.25	9.55	7.75		7.35	7.55	7.35	10.05	13.20
			9.85					7.45			
Memphis	.10	6.79	7.69		6.90		7.01	7.09	6.88	8.24	
Milwaukee	.20	6.47	7.47	8.21	6.71		6.61	6.86	6.60	7.69	12.34
				8.39						11.99	14.69
New Orleans	.15	6.70	7.65	9.23	6.80		6.90	7.05	6.80	8.70	14.84
							6.95			10.70	
New York	.10	6.97	7.76	8.79	7.36		7.18	7.13	7.30	8.63	12.63
		6.98	8.46	8.99	7.56		7.27	7.38	7.37	8.73	12.28
Norfolk	.20	7.00			7.10		7.10	7.10	7.10	8.60	
Philadelphia	.10	6.19	7.29	8.09	6.96		6.49	6.54	6.74	8.19	11.66
				8.23						11.96	14.61
Pittsburgh	.20	6.38	7.38	8.30	6.72		6.52	6.69	6.51	7.85	12.25
				8.50	6.75					11.90	14.60
Portland	.20	7.60	8.75	9.65	7.85		7.45	7.50	7.55	10.95	
Salt Lake City	.20	7.65	10.20	10.70	9.05		7.70	7.70	8.80	10.95	
							8.85				
San Francisco	.20	7.55	8.95	9.35	7.80		7.40	7.50	7.35	10.05	13.20
				9.85							
Seattle	.00	8.10	9.80	10.15	8.20		7.80	7.75	7.80	10.95	13.65
St. Louis	.20	6.62	7.67	8.54	6.91		6.81	7.09	6.80	7.89	12.54
		6.67		8.59							12.19
St. Paul	.15	7.03	8.03	8.96	7.28		7.19	7.35	7.16	8.26	12.56
			8.58								14.84

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets for quantity.
Exceptions: (1) 1500 to 9999 lb. (2) 1000 lb or over. (3) \$.25 delivery. (4) 1000 to 1999 lb, \$.25 delivery.

Miscellaneous Prices

(Effective Aug. 24, 1954)

TOOL STEEL

F.o.b. Mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.54
18	4	1	—	5	2.185
18	4	2	—	—	1.705
18	4	1.5	8	—	.90
6	4	2	6	—	1.29
High-carbon chromium					
Oil hardened manganese					
Special carbon					
Extra carbon					
Regular carbon					
Warehouse prices on and east of Mis-					
issippi are 3.5¢ per lb higher. West of					
Mississippi, 5.5¢ higher.					

CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	\$111.80 to \$115.30
6 to 24-in., del'd N. Y.	115.00 to 116.00
6 to 24-in., Birmingham	98.00 to 102.50
6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	\$129.50 to \$131.50
Class "A" and gas pipe, 5¢ extra; 4-in. pipe is 5¢ a ton above 6-in.	

LAKE SUPERIOR ORES

61.50% Fe; natural content, delivered lower Lake ports. Prices effective July 1, 1953, to end of 1954 season.	
	Gross Ton
Openhearth lump	\$11.15
Old range, bessemer	10.30
Old range, nonbessemer	10.15
Mesabi, bessemer	10.05
Mesabi, nonbessemer	9.90
High phosphorus	9.90
Prices based on upper Lakes rail freight rates, Lake vessel freight rates, handling and unloading charges, and taxes thereon, in effect on June 24, 1953. Increases or decreases after such date are for buyer's account.	

COKE

	Net-Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	\$14.25 to \$14.50
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	\$16.50 to \$17.00
Foundry, oven coke	
Buffalo, del'd	\$23.08
Chicago, f.o.b.	24.50
Detroit, f.o.b.	25.50
New England, del'd	26.05
Seaboard, N. J., f.o.b.	24.00
Philadelphia, f.o.b.	23.00
Swedeland, Pa., f.o.b.	23.00
Palmsville, Ohio, f.o.b.	25.50
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.43
Cincinnati, del'd	26.56
St. Paul, f.o.b.	23.75
St. Louis, f.o.b.	26.00
Birmingham, f.o.b.	22.65
Lone Star, Tex., f.o.b.	18.50

ELECTRODES

Cents per lb, f.o.b. plant, threaded, with nipples, unboxed

GRAPHITE			CARBON		
Diam. (In.)	Length (In.)	Price	Diam. (In.)	Length (In.)	Price
24	84	20.50	40	100, 110	8.95
29	72	20.00	35	110	8.95
12 to 18	72	20.80	30	110	8.95
7 to 10	60	21.00	24	72 to 84	9.10
8	60	22.25	20	90	8.95
4	40	26.00	17	72	9.10
3	40	27.25	14	72	9.50
2 1/2	30	28.00	10, 12	60	10.30
2	24	42.50	8	60	10.55

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts

	Discount Less Case	C.
1/2 in. & smaller x 4 in. & shorter	2	23
1/2 in. & smaller x 6 in. & shorter	+3	18
3/16 in. & 1/2 in. x 6 in. & shorter	+4	17
3/4 in. & larger x 6 in. & shorter	+6	15
All diam. longer than 6 in.	+15	8
1/2 in. & smaller x 6 in. & shorter	+3	18
Lag, all diam. x 6 in. & shorter	6	25
Lag, all diam. longer than 6 in.	+2	19
Plow bolts	23	23

Stove Bolts

Packaged, package list	44 1/2—10
Bulk bulk list*	59
*Minimum quantity per item: 15,000 pieces lengths to 3"; 5,000 pieces lengths over 3". Special finishes: Zinc, Parkerized, cadmium or nickel add 6¢ per lb net. Black oil finish add 3¢ per lb net.	

Nuts, H.P., C.P., reg. & hvy.

	Base Discount	Case or Keg
3/4" or smaller	55	64
3/4" to 1 1/4" inclusive	53	66
1 1/4" to 1 1/2" inclusive	60	67 1/2

C.P. Hex regular & hvy.

All sizes	55	64
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Hot Galv. Nuts (all types)

3/4" or smaller	38	50
3/4" to 1 1/4" inclusive	41	52 1/2

Finished, Semi-finished, Slotted or Castellated Nuts

All sizes	55	66
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Rivets

	Base per 100lb	Pct Off List
1/2 in. & larger	\$9.25	
7/16 in. and smaller		37

Cap Screws

	Discount Bright	H.C. Heat Treated
New std. hex head, packaged		
3/4" x 6" and smaller and shorter	38	28
3/4" x 6", 1" x 6" and shorter	15	1
New std. hex head, bulk*		
3/4" x 6" and smaller and shorter	50	42
3/4" x 6", 1" x 6" and shorter	32	21
*Minimum quantity per item: 15,000 pieces 3/4", 5/16", 3/8" diam; 5,000 pieces 7/16", 1/2", 9/16", 5/8" diam; 2,000 pieces 3/4", 3/8", 1" diam.		

Machine Screws

Packaged, gross list	44 1/2—10
Bulk, bulk list*	17
*Minimum bulk quantity, 15,000 pieces per item.	

Machine Screw & Stove Bolt Nuts

Packaged, package list	36—10
Bulk, bulk list*	17
*Minimum bulk quantity, 15,000 pieces per item.	

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5.00)	\$109.00
No. 1 Ohio	102.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	93.00
No. 2 Ohio	102.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50)	16.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$115.00
Childs, Hays, Pa.	120.00
Chicago District	125.00
Western Utah	131.00
California	138.00
Super Duty	
Hays, Pa., Athens, Tex., Windham	132.00
Curtner, Calif.	150.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	19.00
Silica cement, net ton, bulk, Hays, Pa.	21.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala.	20.00
Silica cement, net ton, bulk, Utah and Calif.	28.50

Chrome Brick

Per net ton

Standard chemically bonded Balt.	\$86.00
Standard chemically bonded, Curtner, Calif.	96.25
Burned, Balt.	80.00

Magnesite Brick

Standard Baltimore	\$109.00
Chemically bonded, Baltimore	97.50

Grain Magnesite

St. %-in. grains

Domestic, f.o.b. Baltimore in bulk fines removed	\$64.40
Domestic, f.o.b. Chewelah, Wash., Luning, Nev.	
in bulk	38.00
in sacks	43.75

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	\$14.50
Midwest	14.60
Missouri Valley	13.65

FLUORSPAR

Washed gravel, f.o.b. Rosiclare, Ill. Price, net ton; effective CaF ₂ content:	
72 1/2%	\$44.00
70% or more	42.50
60% or less	38.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f. New York, ocean bags	11.25¢
Canadian sponge iron, Del'd in East	12.0¢
F.o.b. ship, pt., carloads	9.5¢
Domestic sponge iron, 98+ % Fe, carload lots	18.0¢
Electrolytic iron, annealed, 99.5+ % Fe	38.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+ % Fe	53.5¢
Hydrogen reduced iron minus 300 mesh, 98+ % Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to micron, 98%, 00.8+ % Fe	83.0¢ to \$1.48
Aluminum	31.5¢
Brass, 10 ton lots	29.50¢ to 36.50¢
Copper, electrolytic	43.50¢
Copper, reduced	43.50¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quality, del'd	\$3.60
Lead	21.00¢
Manganese	57.0¢
Molybdenum, 99%	22.75
Nickel, unannealed	89.50¢
Nickel, annealed	96.50¢
Nickel, spherical, unannealed	93.50¢
Silicon	48.50¢
Solder powder	7.0¢ to 9.0¢ plus met. value
Stainless steel, 302	91.0¢
Stainless steel, 316	91.10
Tin	14.04¢ plus metal value
Tungsten, 99% (65 mesh)	34.0¢
Zinc, 10 ton lots	17.5¢ to 28.0¢

Ferroalloy Prices

(Effective Aug. 24, 1954)

Ferrochrome

Contract prices, cents per lb contained Cr, lump size, bulk, in carloads, delivered.
65-72 Cr, 2% max. Si.
0.025% C ... 34.50 0.20% C ... 33.50
0.04% C ... 34.50 0.50% C ... 33.25
0.10% C ... 34.00 1.00% C ... 33.00
0.15% C ... 33.75 2.00% C ... 32.75
65-69% Cr, 4.9% C ... 24.75
62-66% Cr, 4.6% C, 6-9% Si ... 25.60

S. M. Ferrochrome

Contract prices, cents per pound, chromium contained, lump size, delivered.
High carbon type: 60.65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.
Carloads ... 25.85
Ton lots ... 28.00
Less ton lots ... 29.50

High-Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add \$4 per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.
0.10 max. C ... 11.18
0.50% max. C ... 1.14
9 to 11% C ... 1.11

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.)
Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, 24.75¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 2-in. x down, 25.05¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 1-in. x down, 25.25¢ per lb contained Cr plus 11.00¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.
30-33% Cr, 60-65% Si, 3.00 max. Fe.
Carloads ... 19.00
Ton lots ... 22.10
Less ton lots ... 23.60

Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy, lump, delivered.
16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads ... 20.00
Ton lots ... 22.30
Less ton lots ... 23.30

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.
Ton lots ... 17.50
Less ton lots ... 19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.
Carload lots ... 16.60
Ton lots ... 18.10
Less ton lots ... 19.35

Graphidex No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%; Ti 9 to 11%, Ca 5 to 7%.
Carload packed ... 17.50
Ton lots to carload packed ... 18.50
Less ton lots ... 20.00

Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 76 pct Mn; Cents per-lb

Producing Point
Marrietta, Ashtabula, O.; Alloy,
W. Va.; Sheffield, Ala.; Portland,
Ore. ... 10.00
Clairton, Pa. ... 10.00
Sheridan, Pa. ... 10.00
Philo, Ohio ... 10.00
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.
Briquets, delivered, 66 pct Mn:
Carloads, bulk ... 12.50
Ton lots packed ... 14.05

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.
Manganese Silicon
16 to 19% 3% max. ... \$34.00
19 to 21% 3% max. ... \$6.00
21 to 23% 3% max. ... \$2.50
23 to 25% 3% max. ... \$1.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed ... 36.95
Ton lots ... 38.45

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
Carloads ... 30.00
Ton lots ... 32.00
250 to 1999 lb ... 34.00
Premium for hydrogen-removed metal ... 0.75

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ... 21.35¢

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.
Carloads Ton Less
0.07% max. C, 0.06% P, 90% Mn ... 30.00 31.85 33.05
0.07% max. C ... 27.95 29.80 31.00
0.15% max. C ... 27.45 29.30 30.50
0.30% max. C ... 26.95 28.80 30.00
0.50% max. C ... 26.45 28.30 29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si ... 23.45 25.30 26.50

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.
Carload bulk ... 11.00
Ton lots ... 12.65
Briquet contract basis carlots, bulk, delivered, per lb of briquet ... 12.65
Ton lots, packed ... 14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$92.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$89.50. Add \$1.00 per ton for each additional 0.50% Si up to and including 17%. Add \$1.45 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.
Ton lots Carloads
96% Si, 2% Fe ... 20.10 18.00
97% Si, 1% Fe ... 20.60 18.50

Silicon Briquets

Contract price, cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si briquets.
Carloads, bulk ... 6.30
Ton lots ... 7.90

Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.
25% Si ... 20.00 75% Si ... 13.80
60% Si ... 10.80 85% Si ... 15.55
65% Si ... 12.20 90.55% Si ... 17.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.
Cast Turnings Distilled
Ton lots ... \$2.05 \$2.95 \$3.75
Less ton lots ... 2.40 3.30 4.55

Ferrovandium

35-55% contract, basis, delivered, per pound, contained V.
Openhearth ... \$3.00-\$3.10
Crucible ... 3.10-3.30
High speed steel (Primos) ... 3.20-3.25

Alsilfer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y., per lb.
Carloads ... 9.35¢
Ton lots ... 10.15

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo ... \$1.15

Ferrocolumbium, 50-60%, 2 in. x D contract basis, delivered per pound contained Cb.
Ton lots ... \$9.50
Less ton lots ... 9.55

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, contract basis, del'd, ton lots, 2-in. x D per lb cont'd Cb plus Ta ... \$4.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo ... \$1.30

Ferrophosphorus, electric, 32-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$4.00 unitage, per gross ton ... \$90.00
10 tons to less carload ... \$110.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.50
Less ton lots ... 1.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton ... \$177.00

Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. ... \$2.50

Molybde oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. ... \$1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa. ... \$1.15

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per lb. Carload, bulk, lump ... 15.80¢
Ton lots, packed lump ... 16.75¢
Less ton lots, lump, packed ... 17.25¢

Vanadium Pentoxide, 86-89% V₂O₅ contract basis, per pound contained V₂O₅ ... \$1.25

Zirconium, contract basis, per lb of alloy
35-40%, f.o.b., freight allowed, ton lots ... 21.00¢
12-15%, del'd, lump, bulk-carloads ... 5.00¢

Boron Agents

Borasil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed. B, 3-4% Si, 40-45%, per lb contained B ... \$5.25

Bortam, f.o.b. Niagara Falls
Ton lots, per pound ... 45¢
Less ton lots, per pound ... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, Ton lots ... \$1.20
F.o.b. Wash., Pa.; 100 lb up
10 to 14% B55
14 to 19% B ... 1.20
19% min. B ... 1.50

Grainal, f.o.b. Bridgeville, Pa. freight allowed, 100 lb and over
No. 1 ... \$1.00
No. 6 ... 63¢
No. 79 ... 50¢

Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.
Ton lots ... \$1.44
Less ton lots ... 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd, less ton lots ... \$2.05

Silenz, Contract basis, delivered
Ton lots ... 45.00¢

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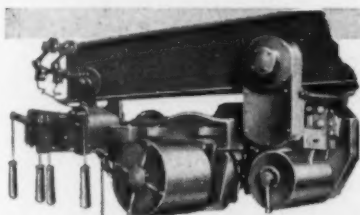


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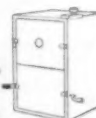
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THE CLEARING HOUSE

News of Used and Rebuilt Machinery

Southern California Active . . .

Los Angeles continues to retain its momentum as a used machinery market. But changes in aircraft designs and production requirements for guided missiles and atomic energy end-use equipment are producing some slack.

Sheet metal equipment is buttressed by a still very lively building trade. Sustained demand continues for press brakes and shears, in all sizes and capacities, at relatively high prices. Metalworking planers are sought in 10-20 ft table lengths priced low enough to warrant conversion into spar mill machines.

The press market is holding up at slightly lower prices, and there are inquiries for small vertical mills. These were the reports from some of the active used machinery dealers THE IRON AGE talked to.

Automatic screw machines are quiet and only popular late model turret lathes command an interest. Medium and heavy duty lathes, 16-24 in., are standing up well.

Production Equipment Off . . .

Welding equipment is in good demand with prices steady. There are only a few calls for production equipment. Radial drill inquiries seem to reflect recent eastern activity and aren't based on real local demand.

Production tools are, on the average, as low as or slightly lower than in the eastern market. Flexible machine tools, although steady, are not bringing a large enough premium to maintain the same level of East-to-West flow of used machinery seen during the aircraft boom periods of the past decade.

Shift in the market today is to money-saving tools rather than expansion with new equipment.

Credit Buying Popular . . . Purchasing on a time basis seems to

be more evident in Southern California. Credit is one of the main regulators of the amount of tool placement in Los Angeles, with price and production capabilities of a machine sometimes secondary consideration in a sale.

Even the machinery auctions are inviting prospective bidders to register credit eligibility with auctioneers prior to a sale so that bid prices might be accepted on a time basis. Local used machinery dealers are doing a good job of placing tools on a credit basis.

In the San Francisco-Oakland Bay area, the used machinery business is painfully slow, but the outlook bright, according to industry men checked by THE IRON AGE. Industry in this area is doing more careful estimating and figuring on future expansion needs than it has in years. Prices are holding at a steady level.

Rebuild Program Advances . . .

The machine tool rebuilding program organized by Army Ordnance in cooperation with Machinery Dealers' National Assn. (THE IRON AGE, June 24, 1954, p. 260) has progressed from the planning to active stage. Offices handling the rebuilding of Ordnance Corps General Reserve Equipment have been designated at Ordnance Districts in Boston, Chicago, Cleveland, Detroit, New York, Philadelphia, Rochester, N. Y., and Springfield.

Auction Truck Plant . . .

Contents of the 12-acre plant of Federal Motor Truck Div. was offered to buyers at auction in Detroit this week. A wide selection of metalworking equipment, lathes, milling machines, grinders, miscellaneous presses and press brakes, shears and welding equipment was sold. In addition the plant itself, which comprises 11 manufacturing and office buildings with a combined area of 500,000 sq ft, was put up for sale.